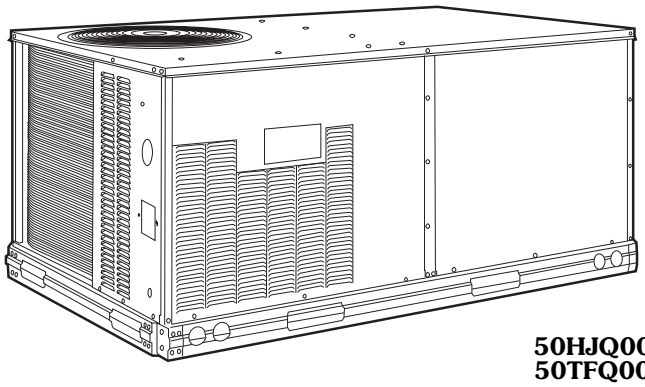
Carrier®

Product Data

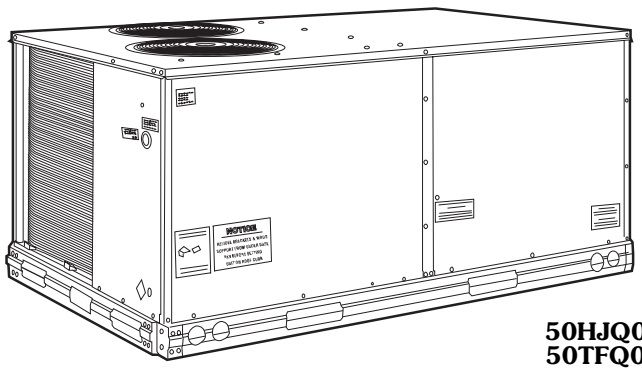
50HJQ004-016
50TFQ004-012
Single-Package Rooftop
Standard and High Efficiency
Heat Pump Units
60 Hz

3 to 15 Nominal Tons

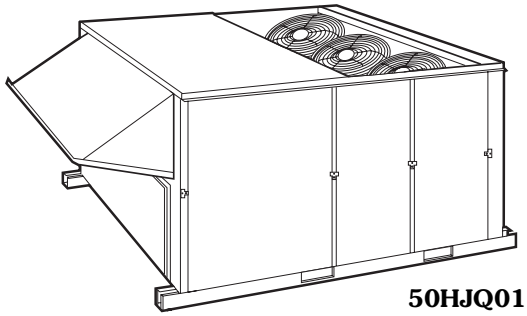
Carrier Comfort System
PremierLink



50HJQ004-007
50TFQ004-007



50HJQ008-012
50TFQ008-012



50HJQ014-016

ASHRAE 90.1 COMPLIANT

Standard-Efficiency (TFQ), and High-Efficiency (HJQ) heat pump units with:

- Pre-painted galvanized steel cabinet for long life and quality appearance
- Commercial strength base rails with built-in rigging capability
- Convertible design for vertical or horizontal supply/return
- Non-corrosive, sloped condensate drain pan, meets ASHRAE 62 (IAQ)
- Two-inch return-air filters
- A wide assortment of factory-installed options available, including high static drives that provide additional performance range
- Factory-installed PremierLink™ digital communicating controls
- Optional gear driven EconoMi$er with CO_2 ventilation control (2 to 10 vac actuator)
- Optional gear-driven EconoMi$er with 4 to 20 mA actuator for PremierLink and 3rd Party EMS controls
- State-of-the-art defrost system
- Dependable 4-way valve operation

Heat Options

- Field-installed electric heat available
- Glycol hydronic coils

Features/Benefits

Every compact one-piece unit arrives fully assembled, charged, tested, and ready to run.

Quiet, efficient operation and dependable performance

Compressors have vibration isolators for quiet operation. Efficient fan and motor design permits operation at low sound levels.

Copyright 2001 Carrier Corporation

Table of contents

Features/Benefits 1-4
Options and Accessories 5-11
Controls 12-28
Application Data 28,29
Typical Piping and Wiring 30,31

50TFQ004-012

Model Number Nomenclature 32
ARI Capacity Ratings 32
Physical Data 33,34
Base Unit Dimensions 35,36
Accessory Dimensions 37,38
Selection Procedure 39
Performance Data 40-69
Electrical Data 70-78
Typical Wiring Schematic 79,80
Guide Specifications 81-85

50HJQ004-012

Model Number Nomenclature 86
ARI Capacity Ratings 86
Physical Data 87,88
Base Unit Dimensions 89,90
Accessory Dimensions 91,92
Selection Procedure 93
Performance Data 94-110
Electrical Data 111-114
Typical Wiring Schematic 115,116
Guide Specifications 117-121

50HJQ014,016

Model Number Nomenclature 122
ARI Capacity Ratings 123
Physical Data 123,124
Base Unit Dimensions 125
Accessory Dimensions 126-128
Selection Procedure 129
Performance Data 130-136
Electrical Data 136
Typical Wiring Schematic 137-139
Guide Specifications 140-144

Unit sizes 008-016 offer lower utility costs through part-load operation using 2 stages of cooling.

Quiet and efficient operation is provided by belt-driven indoor fans (standard on all units over 5 tons). The belt-driven indoor fan is equipped with variable-pitch pulleys which allow adjustment within the rpm ranges of the factory-supplied pulleys. Increased operating efficiency is achieved through computer-designed coils featuring staggered internally enhanced copper tubes. Fins are ripple-edged for strength, lanced, and double waved for higher heat transfer.

Durable, dependable construction

Designed for durability in any climate, the weather-resistant cabinets are constructed of galvanized steel and bonderized, and all exterior panels are coated with a prepainted baked enamel finish. The paint finish is non-chalking, and is capable of withstanding ASTM B117 500-hour Salt Spray Test. All internal cabinet panels are primed, permitting longer life and a more attractive appearance for the entire unit.

In addition, all size 004-012 units are designed with a single, continuous top piece to eliminate any possible leaks. Totally enclosed condenser-fan motors and permanently lubricated bearings provide additional unit dependability.

Patented state-of-the-art Chronotemp™ defrost system uses time and temperature to keep the outdoor coil frost-free for economical, dependable operation. The Chronotemp defrost board can be easily configured for defrost cycles every 30, 50, or 90 minutes.

Dependable 4-way valve operation safely and efficiently accomplishes cycle reversals, defrost, and normal operation.

Easy installation and conversion

All units are shipped in the vertical duct configuration for fit-up to standard roof curbs. (3 different curb sizes fit unit sizes 004-007, 008-012, and 014-016 respectively.) The contractor can order and install the roof curb early in the construction stage, before decisions on size requirements are made.

All units feature a base rail design with forklift slots and rigging holes for easier maneuvering. Durable packaging protects all units during shipment and storage.

The units can be easily converted from a vertical to a horizontal duct configuration by relocating the panels supplied with the unit.

To convert 004-012 units from vertical to horizontal discharge, simply relocate 2 panels. The same basic unit can be used for a variety of applications and can be quickly modified at the jobsite.

To convert 014-016 units from vertical to horizontal discharge, use the optional horizontal supply/return adapter roof curb.

Convenient duct openings in the unit basepans permit side-by-side or concentric duct connections (see Application Data section) without requiring internal unit modification (014,016 only).

NOTE: On units using horizontal supply and return, the accessory barometric relief or power exhaust MUST be installed on the return ductwork.

Thru-the-bottom service connection capability comes standard with the rooftop unit to allow power and control wiring to be routed through the unit's basepan, thereby minimizing roof penetrations (to prevent water leaks). Power and control connections are made on the same side of the unit to simplify installation.

The non-corrosive sloped condensate drain pan permits either an external horizontal side condensate drain (outside the roof curb) or an internal vertical bottom drain (inside the roof curb). Both options require an external, field-supplied P-trap.

Standard 2-in. throwaway filters are easily accessed through a removable panel located above the air intake hood. No tools are required to change unit filters.

All 004-012 units are designed with a single, continuous top piece to eliminate leaking at the seams or gasketing.

Belt-driven indoor-fan motors allow maximum on-site flexibility without changing motors or drives.

Field-installed accessory electric heaters are available in a wide range of capacities. An available single-point wiring kit makes installation simple.

Low voltage wiring connections are easily made due to the large terminal board which is located for quick, convenient access.

In addition, color-coded wires permit easy tracing and diagnostics.

Proven compressor reliability

Design techniques feature computer-programmed balance between compressor, condenser, and evaporator. Carrier-specified hermetic compressors are equipped with compressor overcurrent and overtemperature protection to ensure dependability.

All units have Carrier's exclusive Acutrol™ (004-012) or TXV metering device (014-016) which precisely controls refrigerant flow, preventing slugging and flood-back, while maintaining optimum unit performance. Refrigerant filter driers are standard.

Standard low ambient cooling operation to 25 F; optional head pressure control kit available for outdoor ambient conditions to –20 F.

Integrated economizers and outdoor air

Optional economizers and manual outdoor-air dampers introduce outdoor air which mixes with the conditioned air, improving indoor-air quality and often reducing energy consumption.

During a first stage call for cooling, if the outdoor-air temperature is below the economizer control changeover set point, the discharge-air sensor modulates the economizer outdoor-air damper open to take advantage of free cooling provided by the outside air. When second-stage cooling is called for, the compressor is energized in addition to the economizer. If the outdoor-air temperature is above the changeover set point, the first stage of compression is activated and the economizer stays at vent position. Durablade economizer operation is controlled by a dry-bulb thermostat that senses outdoor-air temperature.

Accessory upgrade kits allow for either outdoor air enthaply changeover or for more precise differential enthalpy control.

Units can also utilize the factory or field-installed EconoMi$er. The EconoMi$er is microprocessor controlled and incorporates a parallel, opposed-blade gear driven damper system. In addition, it has a spring return built into the damper actuator to provide reliable close-on-power-loss. The EconoMi$er comes equipped with up to 90% barometric relief capability for high outdoor airflow applications on 004-012 units only. Optional field-installed Barometric Relief package is available for use on 014-016 size units.

In addition, the EconoMi$er two-stage power exhaust accessory can be utilized to help maintain proper building pressure (004-012 units only). Single stage power exhaust is available for unit sizes 014-016 as a field-installed accessory.

For units without economizer, year-round ventilation is enhanced by a manual outdoor-air damper. On 004-012 units, a 25% or 50% manual damper is available as a field-installed accessory. Unit sizes 014-016 are equipped with a standard manual 25% damper.

Service options

Servicing a rooftop unit has never been easier with the new factory-installed service options for these rooftop units. These options include the following:

- Hinged access panels are provided for the filter/indoor-fan motor, compressors, indoor fan, and control box areas. Quick access to major components is accomplished by simply unlatching and swinging open the various panels. Each hinged panel is permanently mounted to the unit, thereby eliminating the concern of a dropped or wind-blown panel puncturing delicate roof materials. The 4 extended access panels are also equipped with ''tie back'' retaining devices to hold the door in the open position while servicing the unit.
- An external, covered, 115-v Ground Fault Interrupt (GFI) receptacle is provided as a convenient power source for drills, lights, refrigerant recovery units, or other electrical service tools. Simply connect the outlet to a field-supplied and properly fused branch circuit power supply.
- An integral non-fused disconnect switch within the rooftop unit reduces installation time, labor and material costs. Safety is assured by an interlock which prevents access to the control box unless the switch is in the OFF position. In addition, the externally mounted handle incorporates power lockout capability to further protect service personnel.

Carrier PremierLink™ Controls add reliability, efficiency, and simplification

The PremierLink direct digital controls can be ordered as a factory-installed option or as a field-installed accessory. Designed and manufactured exclusively by Carrier, the controls can be used to actively monitor and control all modes of operations, as well as monitor the following diagnostics and features: unit number, zone temperature, zone set point, zone humidity set point, discharge air temperatures, fan status, stages of heating, stages of cooling, damper position, outdoor-air temperature, outdoor humidity level, filter status, fire shutdown status, IAQ set point, enthalpy status, differential enthalpy status, heat/cool lockout, CFM set point, pre-occupancy purge, economizer controls and early morning warm-up.

This controller has a 38.4K baud communications capability and is compatible with *Comfort*Link™ Controls, CCN and ComfortVIEW™ Software. The Scrolling Marquee and Navigator

Features/Benefits (cont)

are optional tools that can be used for programming and monitoring the unit for optimal performance. The addition of the Carrier CO_2 sensor in the conditioned space provides ASHRAE 62-99 compliance and Demand Control Ventilation.

The PremierLink peer-to-peer, internet ready, communicating control is designed specifically for Constant Volume and Variable Volume and Temperature applications. This comprehensive controls system allows all Carrier 3 to 25 ton rooftops to be daisy chained together on a roof to create a fully functional HVAC (heating, ventilation, and air conditioning) automation system.

Carrier Apollo microprocessor controls add reliability, efficiency, and simplification.

Apollo controls are designed and manufactured exclusively by Carrier, the controls can be used to actively monitor and control all modes of operation. The Apollo communicating controls are factory-installed into the rooftop unit control box, and come equipped with built-in diagnostic capabilities. Light-emitting diodes (LEDs) simplify troubleshooting by indicating thermostat commands for both stages of heating and cooling, evaporator fan operation, and economizer operation. The Apollo communicating controls are designed to work specifically with the Carrier TEMP and VVT® (variable volume and temperature) thermostats.

The standard rooftop control system is readily adaptable to all conventional and programmable thermostats. In addition, units are suitable for integration into building monitor control systems if required. This system gives the units the flexibility to communicate with almost any thermostat or building control system.

Indoor-air quality begins with Carrier rooftops

Sloped condensate pans minimize biological growth in rooftop units in accordance with ASHRAE (American Society of Heating, Refrigeration, and Air Conditioning Engineers) Standard 62. Two-inch filters with optional dirty filter indicator switch provide for greater particle reduction in the return air. The face-split evaporator coils improve the dehumidification capability of standard units, maximize building humidity control.

Optional proportional reacting CO_2 sensor is available with the EconoMi$er outdoor air damper option/accessory to aid the IAQ benefits.

Energy$Recycler — the IAQ solution for today's "tight" buildings

Indoor-air quality (IAQ) generally refers to the level of pollutants inside a building. These pollutants include cigarette smoke, carbon dioxide exhaled by occupants, radon gas, car exhaust, paint fumes, and odors.

Concern over increased indoor air pollutants has been spurred by several issues: 1) changes in new building construction methods and retrofit of older buildings have reduced air infiltration rates; 2) Synthetic materials release airborne particles, odors, and chemicals; and 3) HVAC (heating, ventilation, and air conditioning) systems that bring in minimal fresh air.

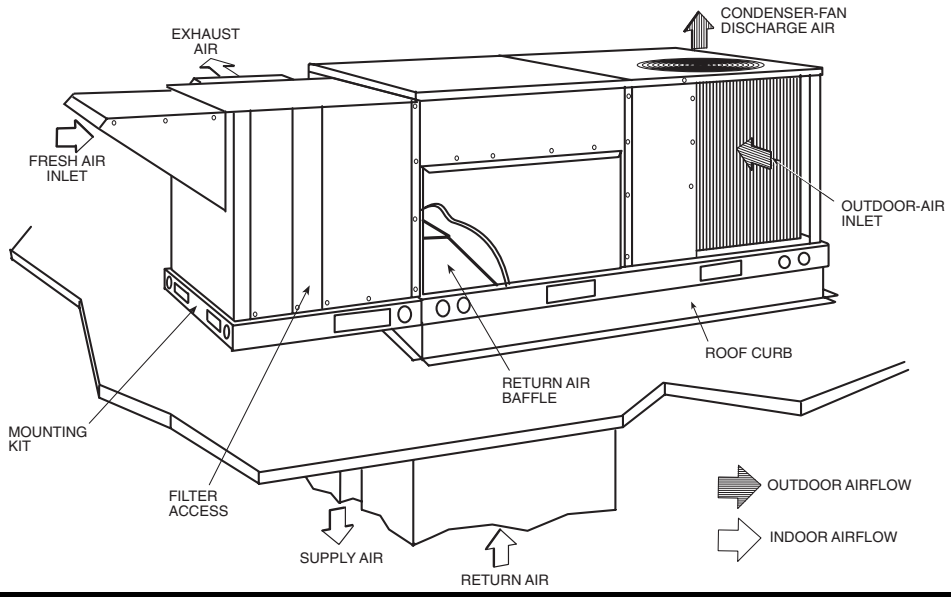
In 1989, IAQ concerns caused ASHRAE to recommend increased ventilation for all public buildings. Simply introducing fresh air into a building, however, is not always practical or cost effective. Additional ventilation can overload HVAC systems and increase energy costs.

Carrier's 62AQ Energy$Recycler unit solves this dilemma by providing increased fresh air while keeping increased costs to a minimum. In addition, the Energy$Recycler helps reduce humidity levels, which helps to prevent deterioration of building materials and retards the growth of mold and mildew.

The 62AQ Energy$Recycler unit provides the best solution to retaining the energy-conserving benefits of today's tighter building construction while improving indoor-air quality.

The Energy$Recycler can be integrally mounted in the size 004-012 units or free standing for all units.

ROOFTOP UNIT WITH ENERGY$RECYCLER (3 to 12 1/2 TON UNITS ONLY)



Options and accessories

ITEM	OPTION*	ACCESSORY†
100% Open Two-Position Damper (004-012)		X
25% Open Two-Position Damper		X
Alternate Motors and Drives (50TFQ004-012)	X	X
Apollo Direct Digital Communicating Controls	X	X
Barometric Relief Damper (014,016 only, not for use with horizontal roof curb)		X
CO_2 sensor for Economi$er		X
Convenience Outlet 115V	X	
Copper fins indoor and outdoor coil	X	
Copper fins outdoor coil	X	
Double Wall in unit airstream (014,016)	X	
Durablade Integrated Economizer (004-012)		X
E-Coat outdoor coil (Aluminum Fin)	X	
E-Coat outdoor coil (Copper Fin)	X	
EconoMi$er (004-012)	X	X
EconoMi$er with Power Exhaust (004-012)	X	X
Electric Heat	X	
Electronic Programmable Thermostat		X
Energy$Recycler (004-012)	X	X
Energy$Recycler mounting kit (004-012)		X
Energy$Recycler supply air blower (004-012)		X
Energy$Recycler transformer for 460v (004-012)		X
Enthalpy or differential enthalpy sensor		X
Fan/Filter Status		X
Emergency Heat Package		X
Head Pressure Controls (Low Ambient Operation)		X
High-Static Motor and Drive (50TFQ004-012)	X	
Hinged Access Panels (50HJQ004-016)	X	
Horizontal Adapter Curb (014,016)		X
Hot Gas Bypass (014,016)	X**	
Hydronic Glycol Coil (014,016)		X
Indoor Air Quality (CO_2) Sensor (EconoMi$er Only)		X
Integrated EconoMi$er (014,016)	X	X
Johnson METYSES Control	X**	
Manual Outdoor-Air Damper (25% Open)		X
Manual Outdoor-Air Damper (50% Open)		X
Motormaster® Head Pressure Control (Cycle Control or Fan Speed Modulation)		X
Novar Control	X	
Outdoor Air Enthalpy Sensor (EconoMi$er Only)		X
Outdoor Coil Grille (004-012)		X
Outdoor Coil Hail Guard Assembly (004-012)		X
Power Exhaust (no barometric relief on sizes 014,016)		X
Power exhaust transformer for 460 or 575 v (004-012)		X
Power Exhaust with Barometric Relief (004-012)		X
Precoat Al. Fins on outdoor coil	X	
PremierLink DDC Communicating Control	X	X
Return Air Enthalpy Sensor (EconoMi$er Only)		X
Return Air Temperature Sensor (EconoMi$er Only)		X
Roof Curbs (Vertical and Horizontal Discharge)		X
Salt Spray Protection Package (50TFQ008-012)		X
Smoke Detectors	X**	
Stainless Steel Condensate Pan (014,016)	X**	
Temp control for EconoMi$er		X
Thermostats and Subbases		X
Thru-the-Bottom Utility Connections		X
Time Guard® II Control Circuit		X
Unit-Mounted Non-Fused Disconnect		X
UVC Lamps	X**	X
Winter Start Time Delay (014,016)		X

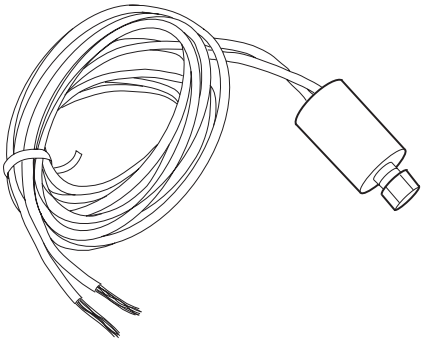
*Factory-installed.
†Field-installed.
**Special order/DEC only.

NOTES:
1. Refer to unit price pages or contact your local representative for accessory/and option package information.
2. Some options may increase product lead times.

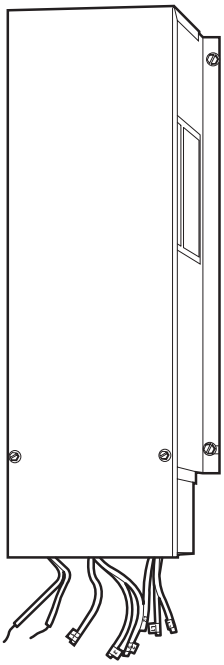
Options and accessories (cont)

LOW AMBIENT CONTROLS

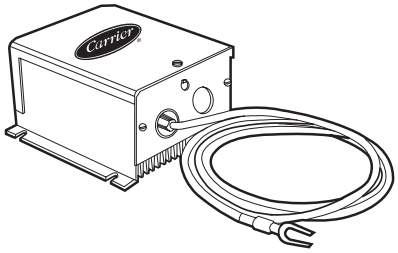
Standard units are designed to operate in cooling at outdoor temperatures down to 25 F (for size 004-012 units) and 40 F (for size 014,016 units). With accessory Motormaster control (condenser-fan cycling) units can operate at outdoor temperatures down to –20 F. The head pressure controls, which mount in the condenser section, control the condenser-fan motor to maintain correct condensing temperature.



MOTORMASTER IV CONTROL
(CONDENSER FAN CYCLING)

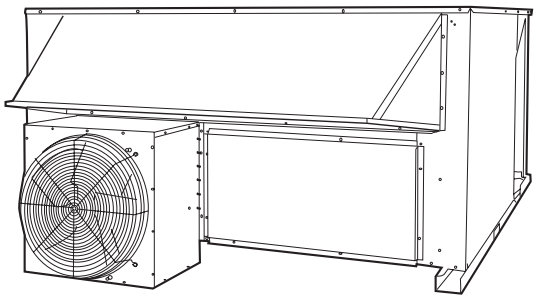


MOTORMASTER I, III CONTROL
(CONDENSER FAN SPEED MODULATOR)



MOTORMASTER II CONTROL
(CONDENSER FAN CYCLING)

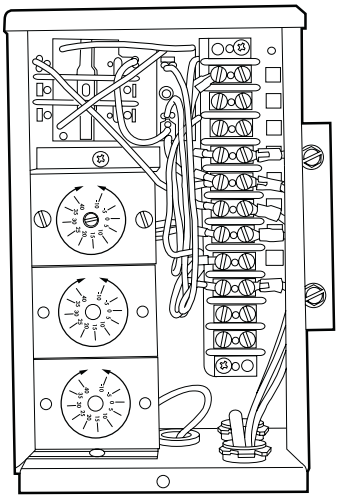
BAROMETRIC RELIEF/POWER EXHAUST (014,016 Shown)



When used with accessory/optional economizer, the barometric relief or power exhaust accessory helps to relieve building overpressurization.

NOTE: This is not available with horizontal supply adapter curb.

EMERGENCY HEAT CONTROL PACKAGE



Emergency heat control package allows emergency operation of electric heat and fans by bypassing compressor circuits and outdoor thermostats.

ENVIRO-SHIELD™ OUTDOOR COIL OPTIONS

Outdoor coil options are available to match coil construction to site conditions for the best corrosion durability. Pre-coated coils provide protections in mild coastal environments. All copper coils are best suited for moderate coastal applications, while E-coated coils provide superior protection in severe coastal and industrial applications.

OUTDOOR COIL PROTECTION APPLICATIONS

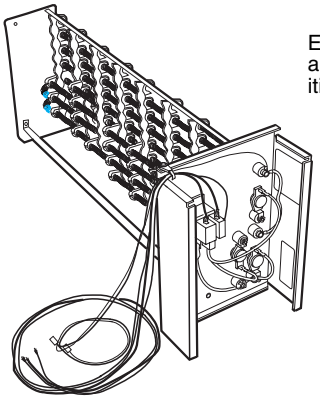
DESCRIPTION (*Enviro-Shield* Option)	ENVIRONMENT*					
	Standard, Non-Corrosive	Mild Coastal	Moderate Coastal	Severe Coastal	Industrial	Combined Coastal and Industrial
Standard, Al/Cu	X					
Pre-Coated Al/Cu		X				
Cu/Cu			X			
E-Coated Al/Cu					X	
E-Coated Cu/Cu				X		X

LEGEND

Al/Cu — Aluminum Fin with Copper Tube Coil
Cu/Cu — Copper Fin with Copper Tube Coil
Enviro-Shield — Family of Coil Protection Options
E-Coated — Extremely flexible and durable epoxy coating uniformly applied to the coil surfaces.
Pre-Coated — Epoxy Coating Applied to Fin Stock Material

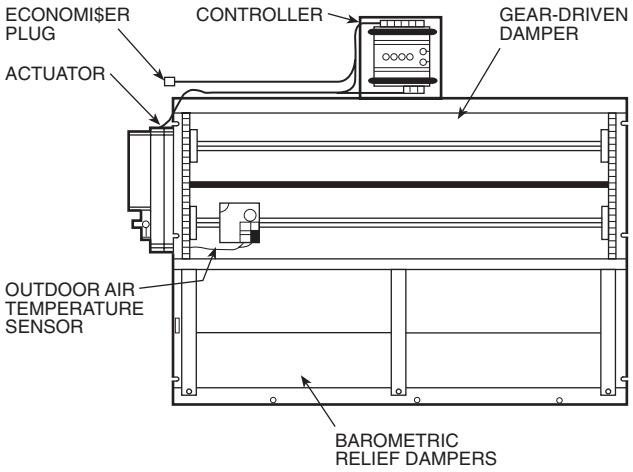
*See “Selection Guide: Environmental Corrosion Protection” Catalog No. 811-217 for more information.

ELECTRIC HEATERS

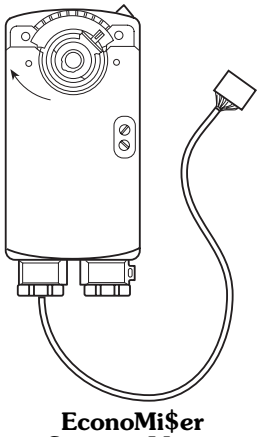


Electric heaters (and single point kits) are available in a wide range of capacities for factory or field installation.

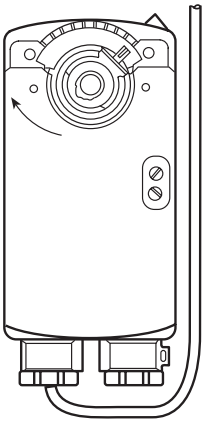
ECONOMI$ER (004-012 Shown)



Factory-installed EconoMi$er utilizes a microprocessor-based control, gear drive damper system, low pressure drop characteristics, built-in spring return (for close upon power loss), and an integral barometric damper. Integral barometric relief 004-012 only.

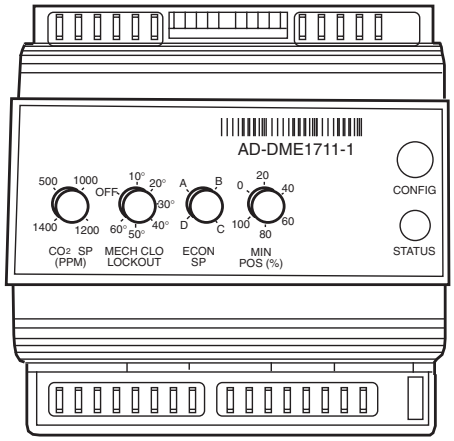


EconoMi$er Stepper Motor



4-20 mA EconoMi$er Actuator (use for PremierLink or 3rd Party Interface)

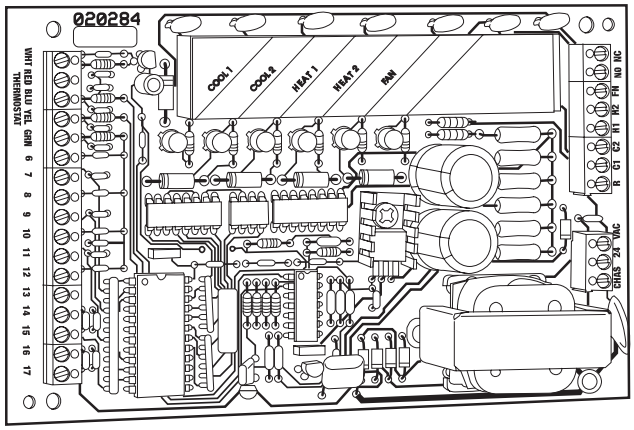
ECONOMI$ER MICROPROCESSOR CONTROLLER



Inputs for Dry Bulb, Enthalpy, Differential Temperature or Enthalpy, CO_2 Sensor, or Potentiometer

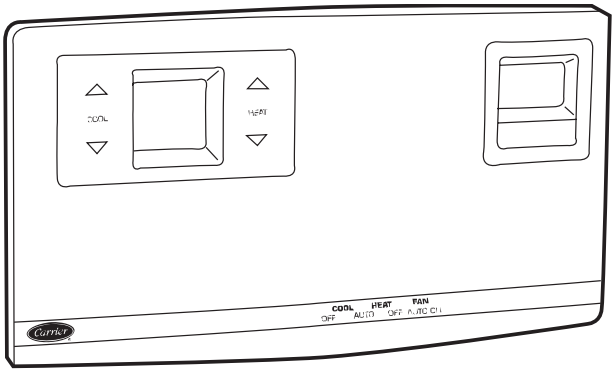
Options and accessories (cont)

FACTORY-INSTALLED APOLLO COMMUNICATING CONTROLS



The Apollo direct digital controls are designed exclusively by Carrier, and are used to actively monitor and control all modes of operation as well as to monitor evaporator-fan status, filter status, supply-air temperature, outdoor-air temperature, and indoor-air quality. They are designed to work in conjunction with Carrier TEMP and VVT® (Variable Volume/Variable Temperature) system thermostats.

ELECTRONIC PROGRAMMABLE THERMOSTAT

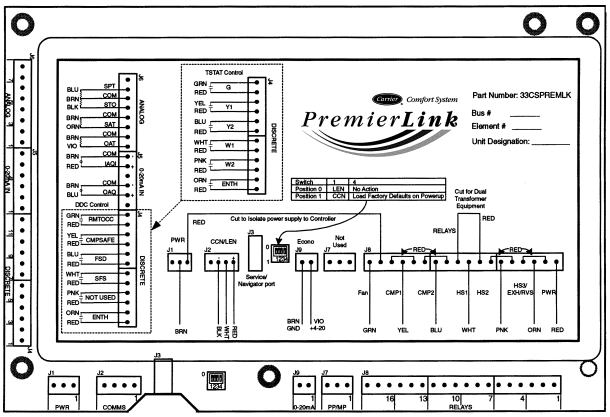


Carrier's electronic programmable thermostat provides efficient temperature control by allowing you to program heating and cooling set-backs and set ups with provisions for weekends and holidays. Accessory remote sensing package is also available to provide tamperproof control in high traffic spaces. Used in conjunction with factory-installed Apollo control, this thermostat provides a 5-minute recycle timer between modes of operation for short-cycle protection.

TIME GUARD® II CONTROL

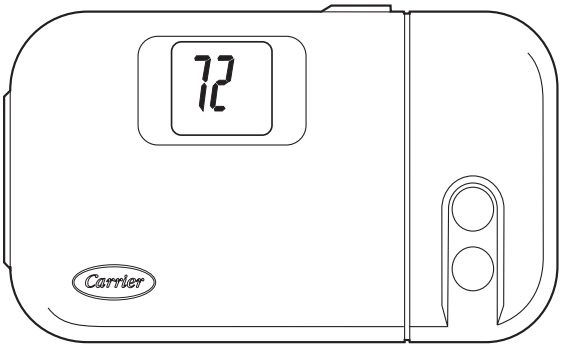
Time Guard II Control automatically prevents compressor from restarting for at least 5 minutes after a shutdown. Accessory prevents short cycling of compressor if thermostat is changed rapidly. Time Guard II control mounts in the control compartment of unit.

PREMIERLINK™ COMMUNICATING CONTROLS



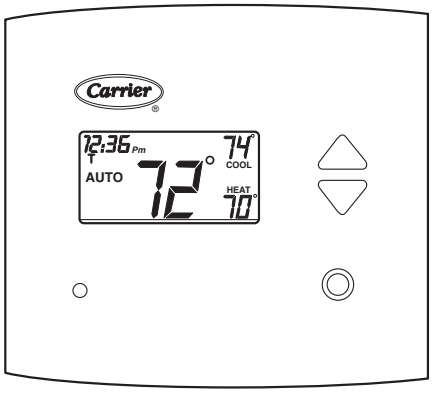
Carrier's newest CCN rooftop control for 50TJQ and 50HJQ units. PremierLink is plug and play compatible with ComfortLink™ controls and is DCV (Demand Control Ventilation) and Internet ready.

CARRIER TEMP SYSTEM THERMOSTAT



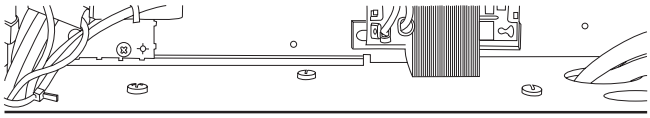
Designed specifically for use with Carrier commercial systems, this Carrier programmable thermostat features LED occupied/unoccupied displays and setback mode which can override continuous fan operation.

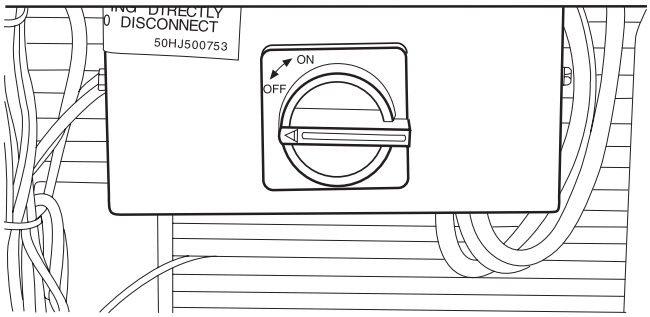
CARRIER DEBONAIR® THERMOSTAT



Carrier's Debonair line of commercial programmable thermostats are wall-mounted, low-voltage thermostats which maintain room temperature by controlling operation of an HVAC (Heating, Ventilation, and Air-Conditioning) system. Separate heating and cooling set points and autochangeover capability allow occupied and unoccupied programming for energy savings.

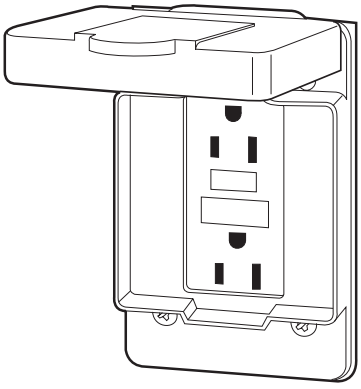
UNIT MOUNTED DISCONNECT (sizes 004-012)





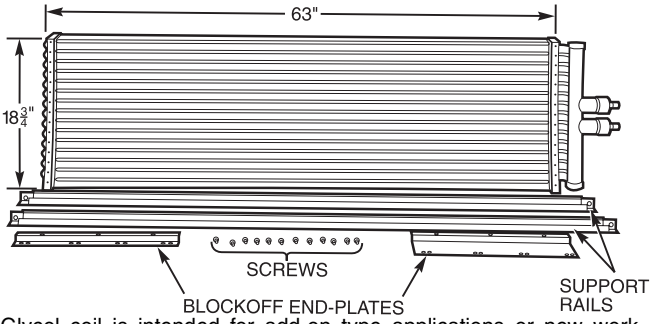
Factory-installed, internally mounted, NEC (National Electrical Code) and UL (Underwriters' Laboratories) approved non-fused switch provides unit power shutoff with disconnect lockout protection capability. The switch is accessible from outside the unit.

CONVIENIENCE OUTLET



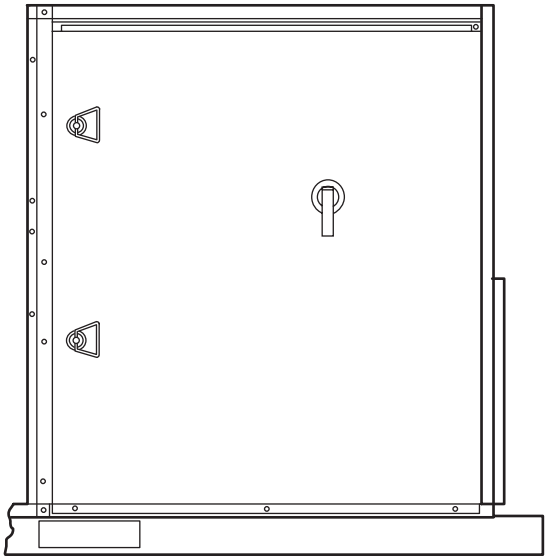
Factory-installed, internally mounted and externally accessible 115-v female receptacle. Includes 15-amp GFI (Ground Fault Interrupter) receptacle with independent fuse protection. Voltage required to operate convenience outlet is provided by a field-installed transformer (014,016 units).

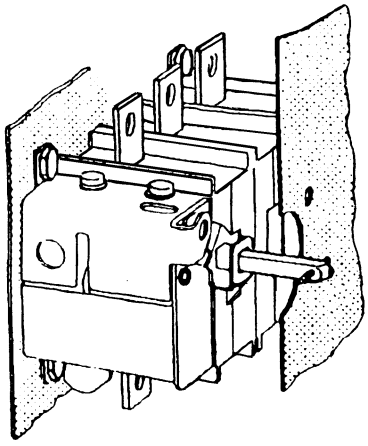
GLYCOL COIL (014,016 only)

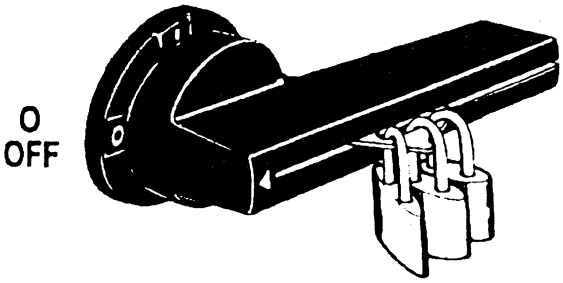


Glycol coil is intended for add-on type applications or new work where a boiler system is available. Glycol coil and electric heat cannot be installed together.

UNIT MOUNTED DISCONNECT (sizes 014,016)



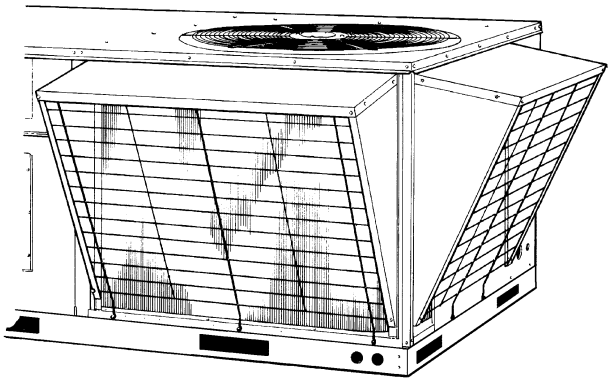




Factory-installed, internally-mounted, NEC (National Electrical Code) and UL (Underwriters' Laboratories) approved non-fused switch provides unit power shutoff with disconnect lockout protection capability. The control box access door is interlocked with the non-fused disconnect. The non-fused disconnect must be in the OFF position to open this door. The switch is accessible from outside the unit.

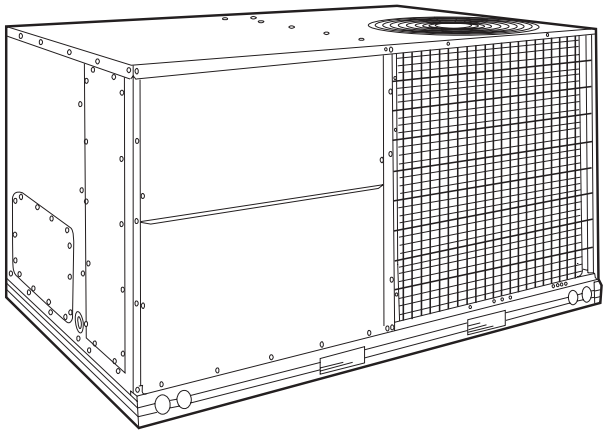
Options and accessories (cont)

HAIL GUARD



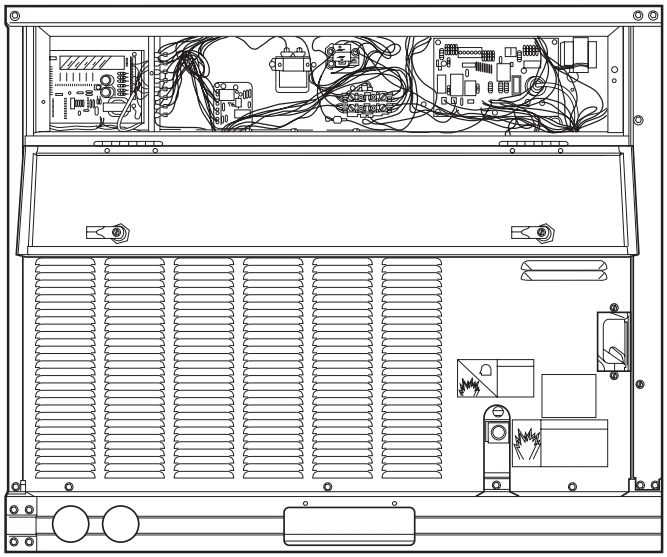
Condenser coil hail guard accessory (field installed) protects coils against damage from hail and other flying debris.

OUTDOOR COIL GRILLE (004-012 only)

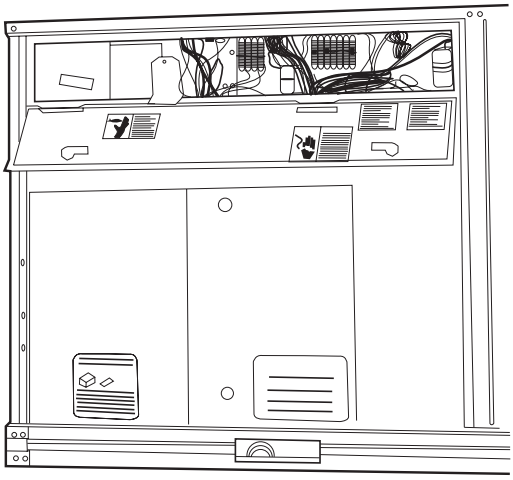


Coil guard grille protects coils against large objects and vandalism.

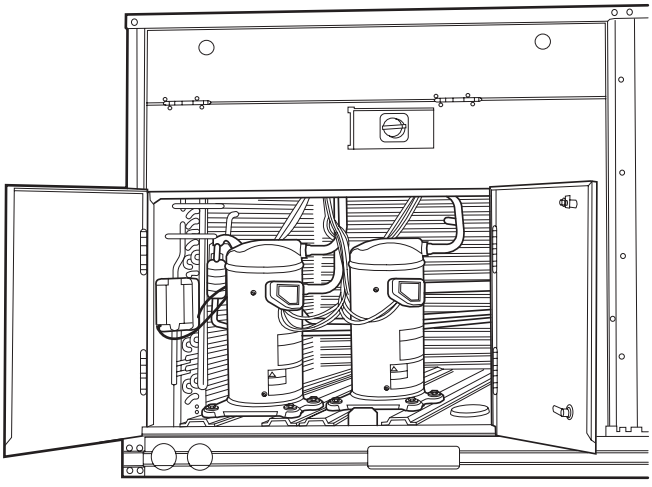
CONTROL BOX HINGED PANEL OPTION, 50HJQ004-007 UNITS WITH APOLLO CONTROL SHOWN



CONTROL BOX HINGED PANEL OPTION, 50HJQ008-012 UNITS SHOWN

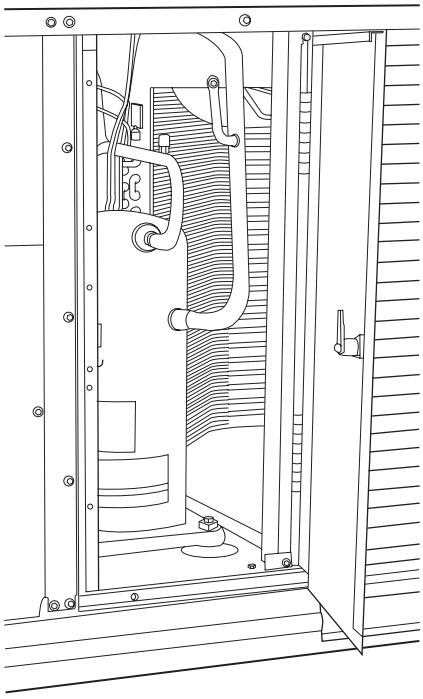


COMPRESSOR HINGED PANEL OPTION, 50HJQ008-012 UNITS SHOWN

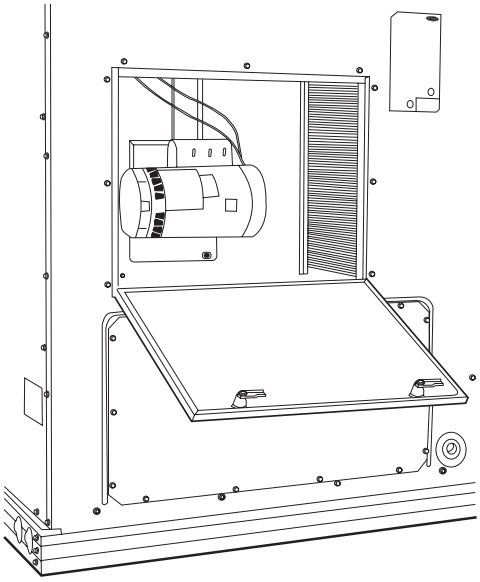


NOTE: Hinged access panels are not available on 50TFQ units.

COMPRESSOR HINGED PANEL OPTION, 50HJQ004-006 UNITS SHOWN

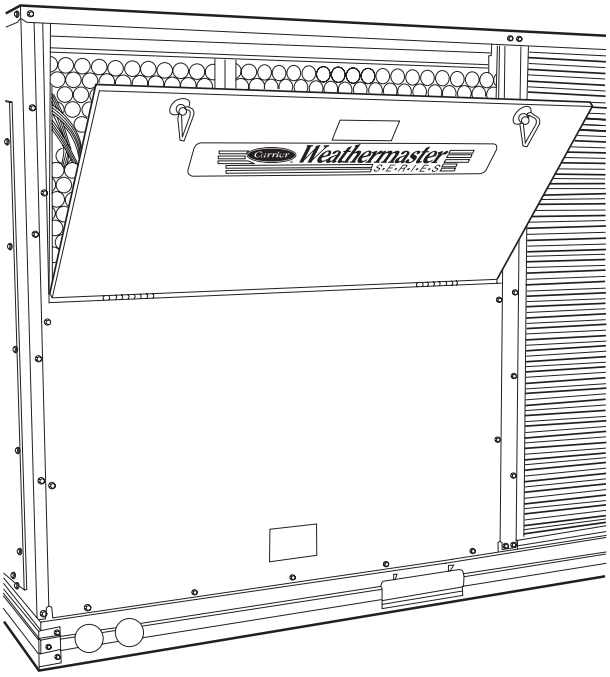


EVAPORATOR-FAN HINGED PANEL OPTION



This is included as a factory-installed option. It permits quick and simple evaporator-fan access.

FILTER HINGED PANEL OPTION



This is included as a factory-installed option. It permits tool-less filter access.

NOTE: Hinged access panels are not available on 50TFQ units.

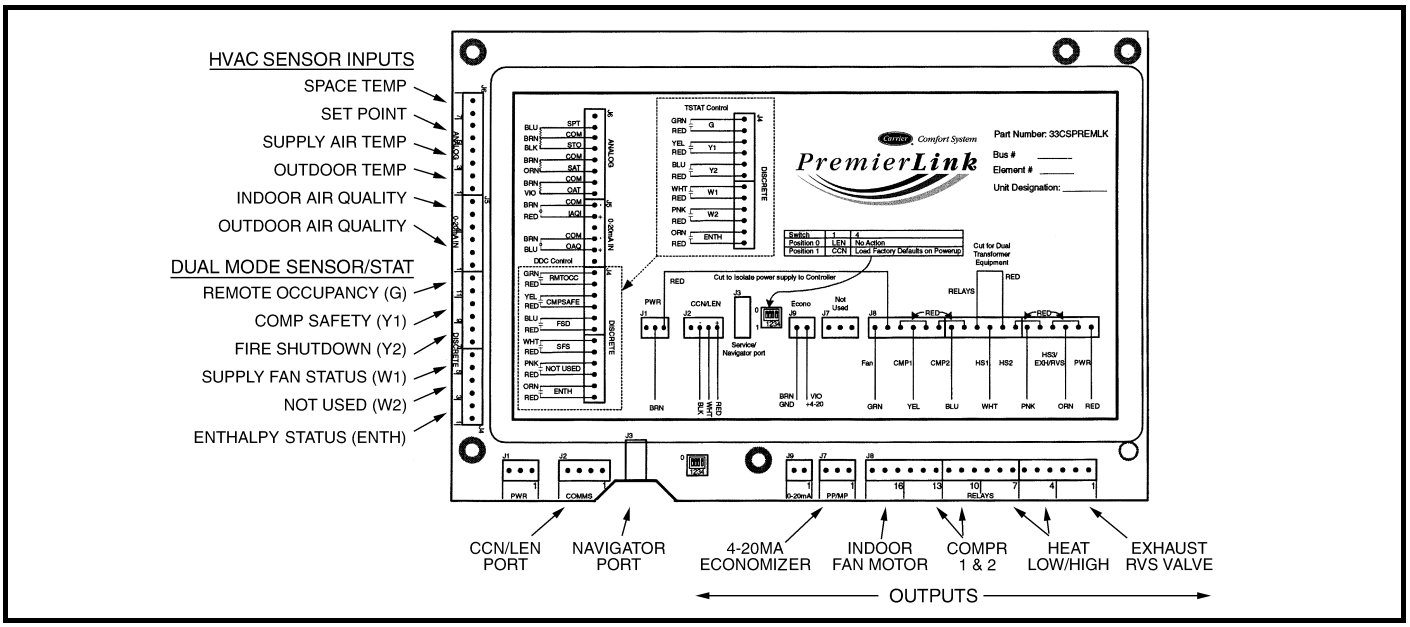
Controls

PremierLink™ Direct Digital controls — The PremierLink Direct Digital Controls (DDC) requires the use of a Carrier electronic thermostat or a CCN connection for time broadcast to initiate its internal timeclock. This is necessary for broadcast of time of day functions (occupied/unoccupied).

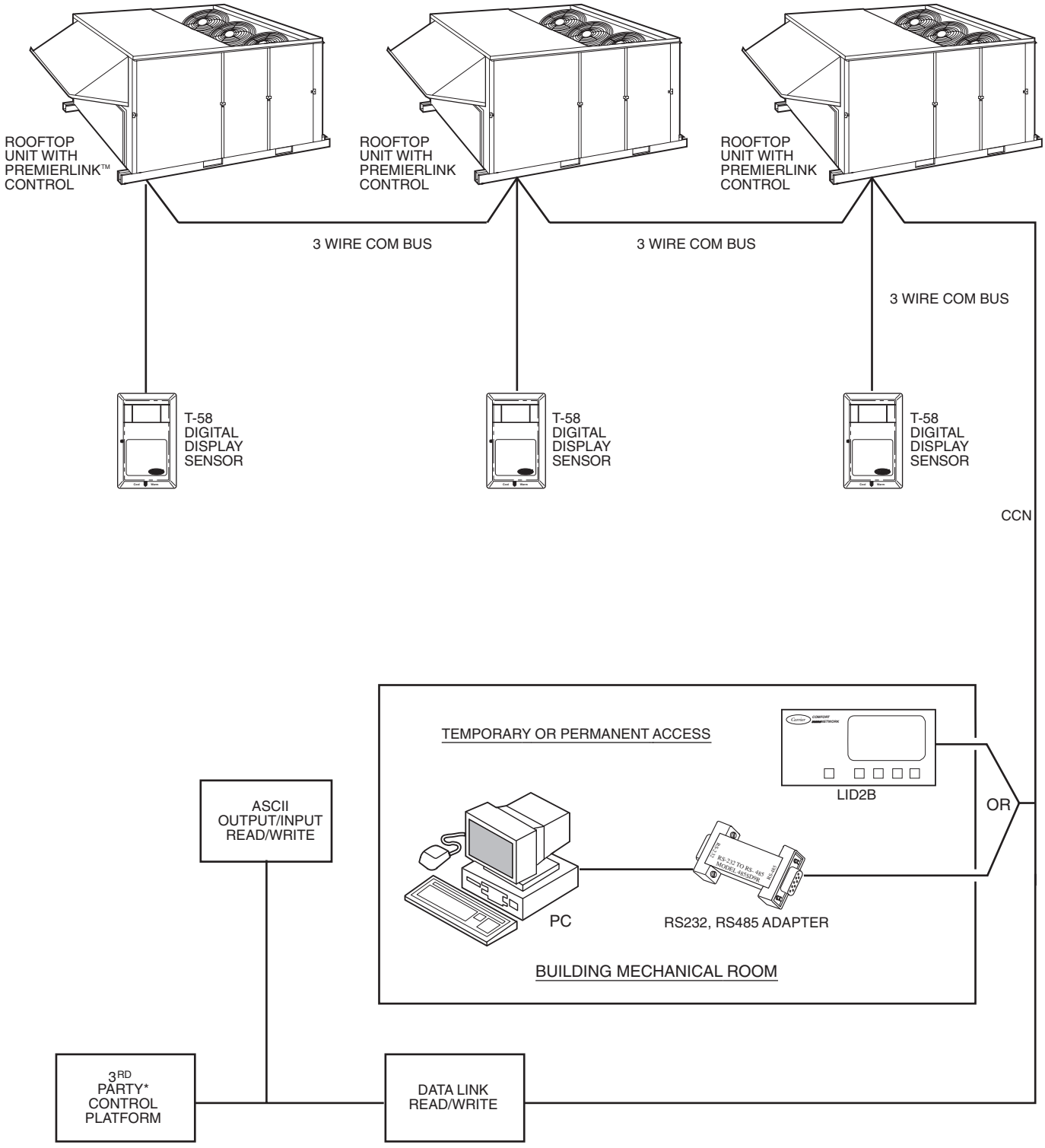
PremierLink Features:

- Equipment Control Functions
  - Cooling Stages
  - Heating Stages
  - Indoor-Fan Motor
  - 4-Way Valve
- EconoMi$er Control Functions
  - Dry Bulb Control
  - Enthalpy Control
  - Differential Enthalpy
  - Power Exhaust
- Advanced Control Functions
  - Smoke Detection
  - Optimal Start (90.1)
  - Unoccupied Free Cool
  - Smart Staging and Optimal Staging
- Network Protocol
  - CCN
  - Internet Ready 38.4 baud rate
- Diagnostics/Advanced Service Features
  - Diagnostics
  - Onboard display
- Scheduling
  - Via Communicating Stat
- User Interface
  - Navigator (LEN protocol)
  - LID2B (CCN)
  - PC w/Carrier software (CCN)

DESCRIPTION	STATUS	UNITS	POINT	LIMITS	ACCESS
Space Temperature	xxx.x	dF	SPT	-40.0 to 245.0 dF	R/W
Supply Air Temperature	xxx.x	dF	SAT	-40.0 to 245.0 dF	R/W
Outside Air Temperature	xxx.x	dF	OAT	-40.0 to 245.0 dF	R/W
Control Setpoint	xxx.x	dF	CLSP		R
Cooling % Total Capacity	xxx	%	CCAP	0 to 100 %	R
Heating % Total Capacity	xxx	%	HCAP	0 to 100 %	R
EconoMi$er Active	No/Yes		ECOS	0 to 1	R
Supply Fan Relay	Off/On		SF	0 to 1	R/W
Supply Fan Status	Off/On		SFS	0 to 1	R
Economizer Position	xxx.x	%	ECONPOS	0.0 to 100.0 %	R/W
Current Min Damper Pos	xxx.x	%	IQMP	0.0 to 100.0 %	R
Filter Status	Clean/Dirty		FLTS	0 to 1	R/W
Remote Occupied Mode	Off/On		RMTOCC	0 to 1	R/W
Heat Stage 1	Off/On		HS1	0 to 1	R
Heat Stage 2	Off/On		HS2	0 to 1	R
Heat 3/Exhaust/Rev Valve	Off/On		H3_EX_RV	0 to 1	R
Enthalpy	Low/High		ENTH	0 to 1	R/W
Indoor Air Quality	xxxx.x		IAQI	0.0 to 5000.0	R/W
Indoor Air Quality Setpt	xxxx.x		IAQS	0.0 to 5000.0	R
Outdoor Air Quality	xxxx.x		OAQ	0.0 to 5000.0	R/W
Fire Shutdown	Normal/Alarm		FSD	0 to 1	R/W
SPT Offset	xx.x	^F	STO	-15.0 to 15.0 ^F	R/W
Compressor 1	Off/On		CMP1	0 to 1	R
Compressor 2	Off/On		CMP2	0 to 1	R
Compressor Safety	Off/On		CMPSAFE	0 to 1	R



TYPICAL CCN/3rd PARTY INTERFACE



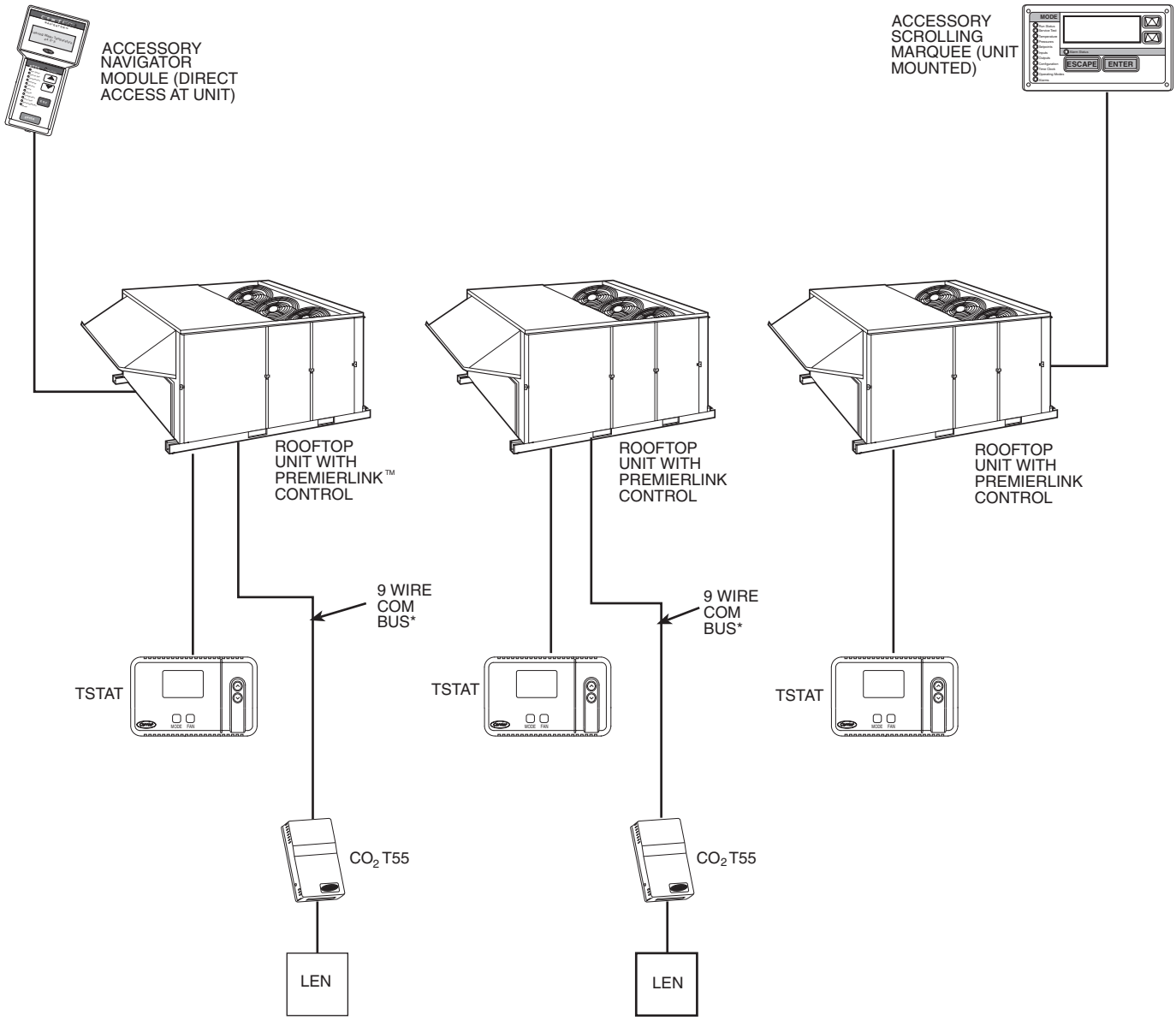
*Example: Metasys, Allerton, ALC, Landis Stafa.

Controls (cont)

Typical LEN (Local Equipment Network) mode

Allows unit software access with Navigator™ or Scrolling Marquee accessories. Both have unit diagnosis and configuration abilities. Thermostat required for stand-alone operation, timeclock required to provide unit schedule (occupied/unoccupied) for sensor applications.

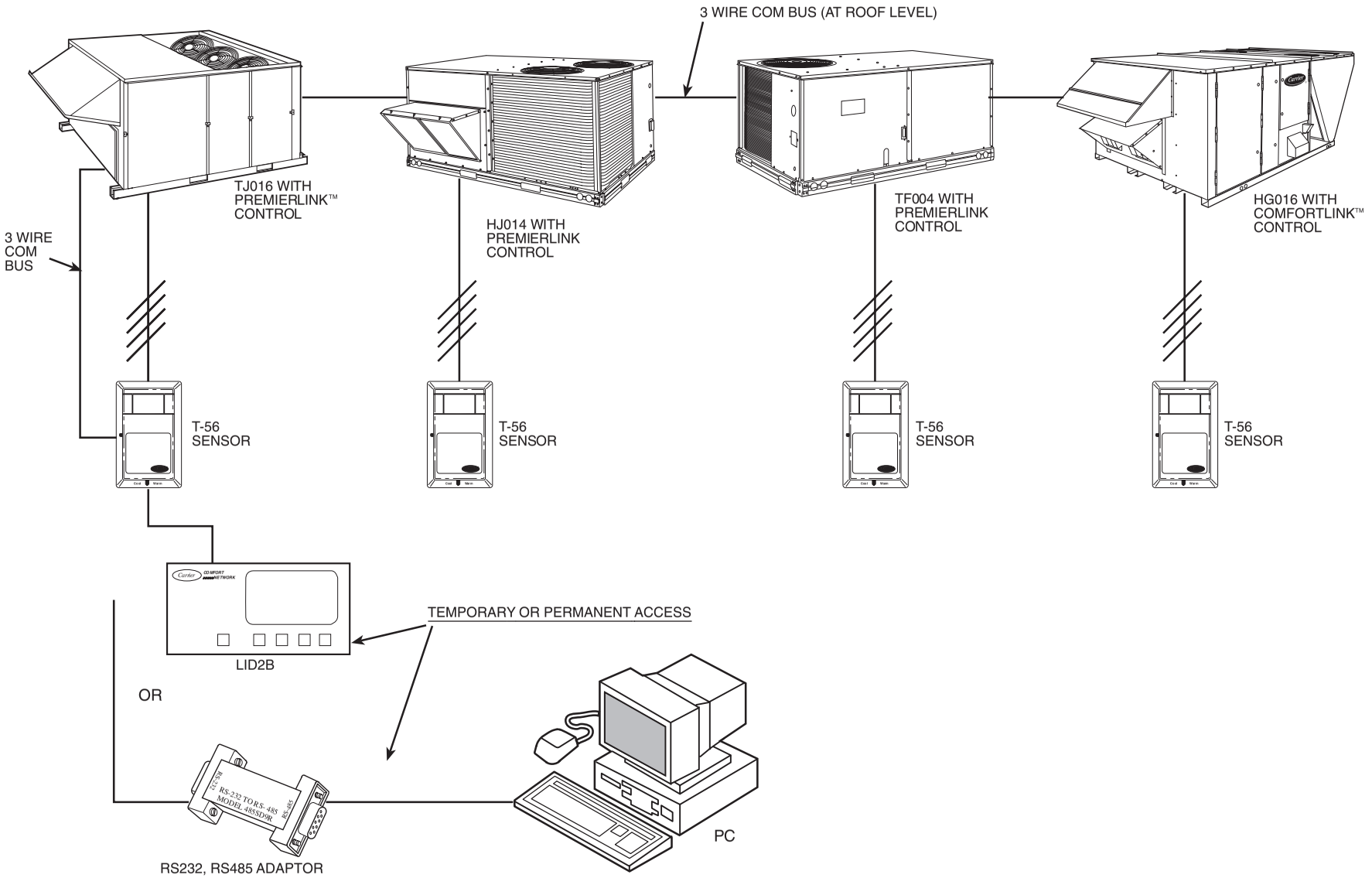
TYPICAL LEN (LOCAL EQUIPMENT NETWORK)



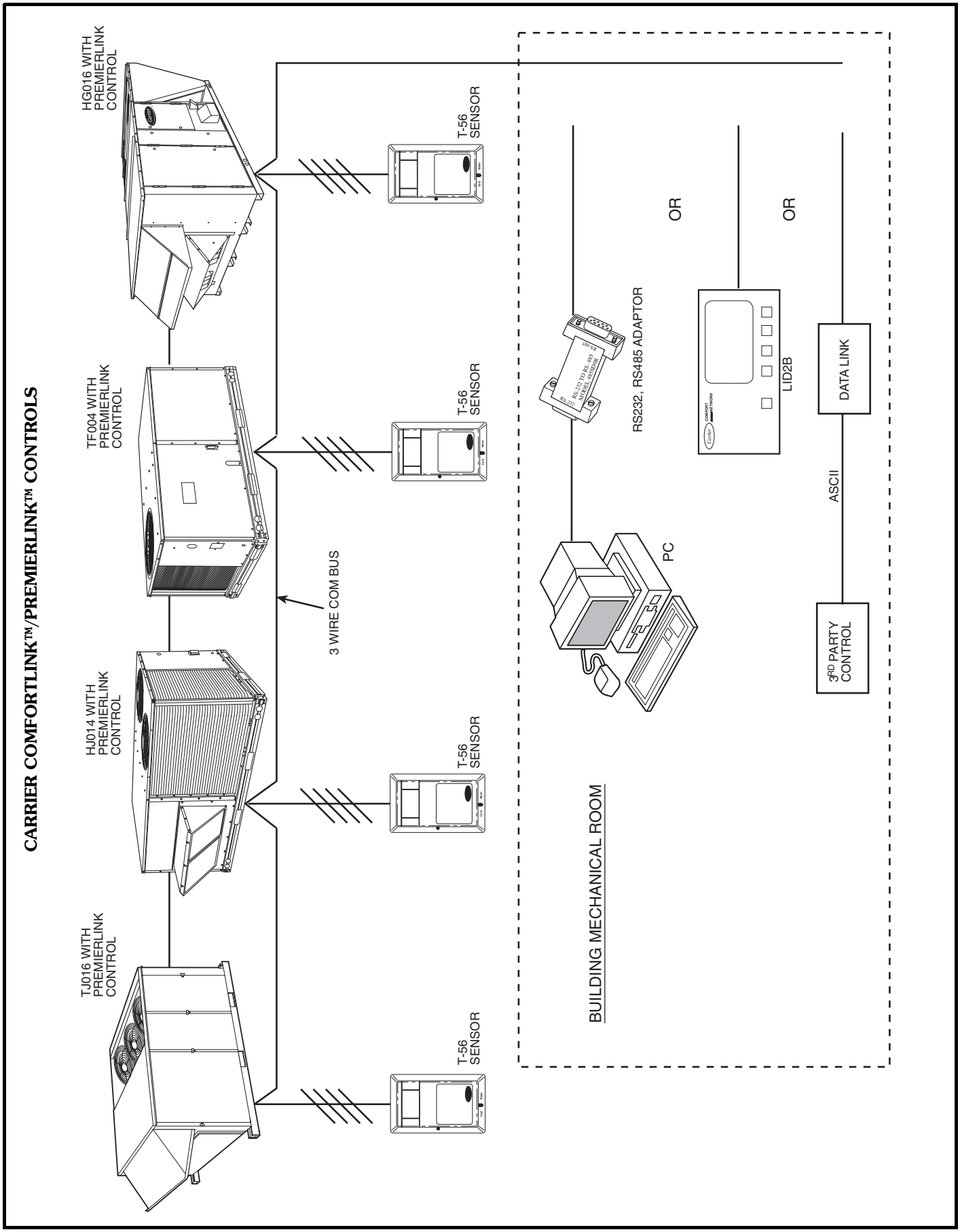
*9 Wire COM Bus includes:
- 2 temperature sensor wires
- 3 LEN communications wires
- 4 CO_2 sensor wires

Functions:
1. Provide Space Temperature for outdoor air comparison (EconoMi$er mode)
2. Provides override of DCV (demand control ventilation) in “low priority”
3. Provides temperature capability in “high priority” (too low SAT-initial heat)
4. Provides Navigator control access to the unit

TYPICAL CCN LOCAL AREA NETWORK (LAN)



Controls (cont)



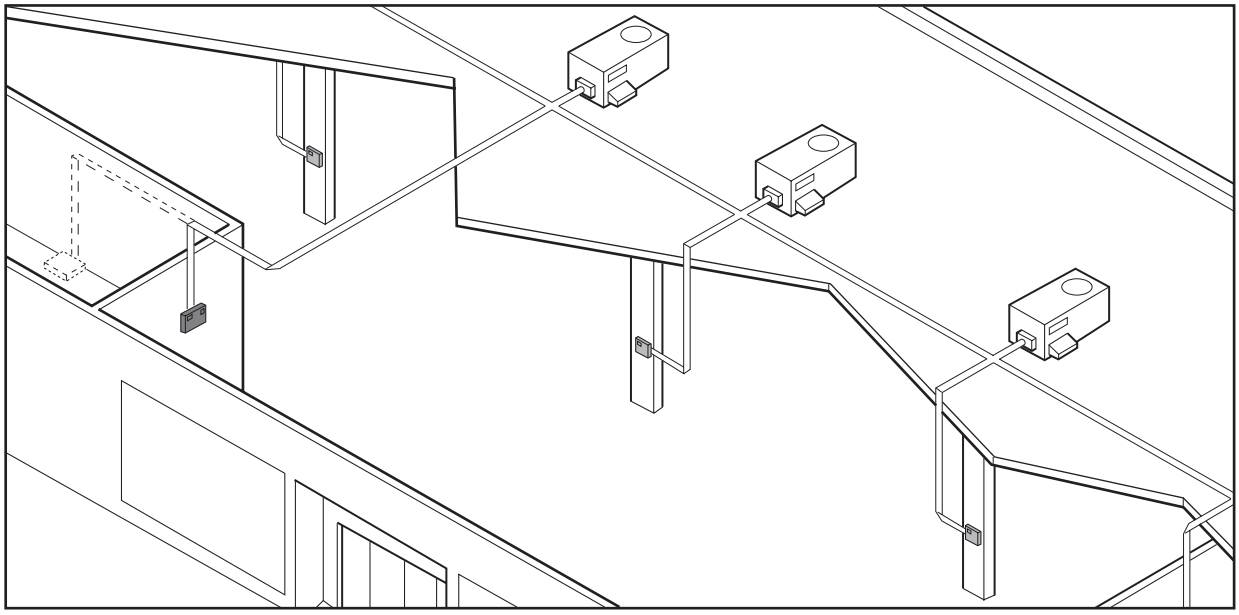
TEMP systems

A TEMP System is a network of communicating Carrier TEMP System Thermostats and rooftop, factory-mounted Apollo direct digital controls, each serving its own zone and heating/cooling unit. Networking allows your building manager to easily access each of your systems from a single location…whether they are in the same building or located throughout town.

The TEMP System's inherently flexible, modular base design supports the ***exact*** number of independent, single zone systems you require…no more, no less, no compromises.

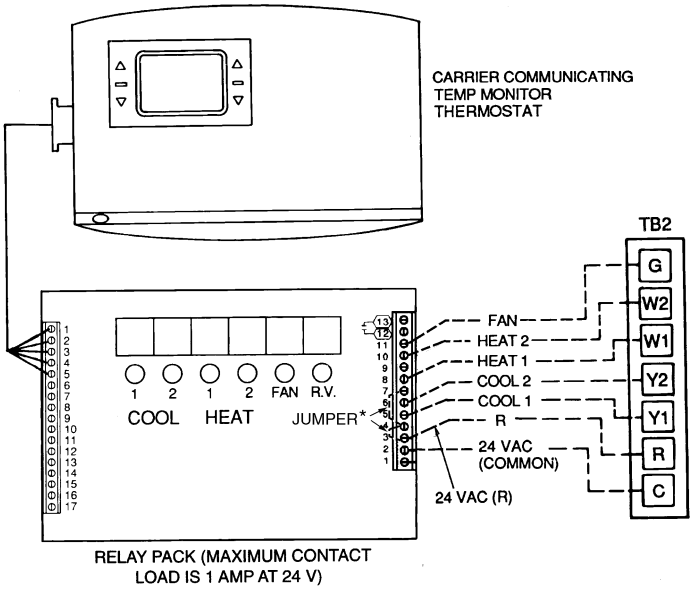
Ideal for department stores, small office buildings, fast food chains, schools, and hotels, a TEMP System is a cost-effective way to maintain comfortable building environments.

NOTE: Unit temperature rise must not be exceeded for proper unit operation.



TEMP SYSTEM THERMOSTAT (WITH TIMECLOCK) TEMP SYSTEM THERMOSTAT (WITHOUT TIMECLOCK)

STANDARD UNIT TYPICAL FIELD THERMOSTAT WIRING



LEGEND

TB — Terminal Block

*Field-installed jumper between terminals 3 and 4, 5 and 7.

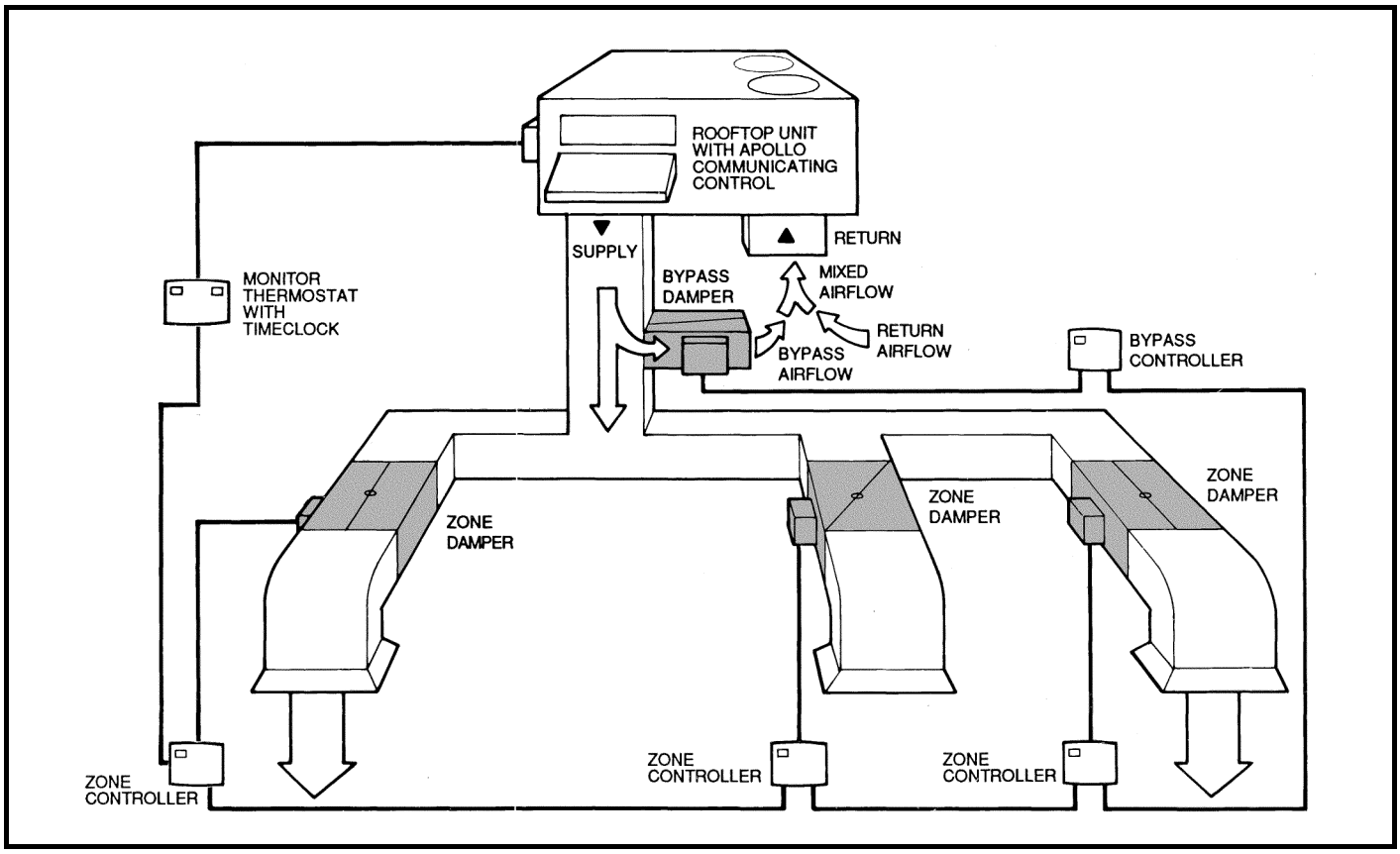
Controls (cont)

Variable Volume/Variable Temperature VVT® Systems

VVT Systems are dedicated to total building comfort. Carrier thermostats, zone dampers, and HVAC equipment with factory-mounted direct digital controls continually monitor and adjust their operation to ensure uninterrupted and personalized comfort for all occupants.

Through the use of communicating electronic controls, VVT Systems are able to provide the comfort of a multiple zone system while using the installation, operating and maintenance economics of single zone equipment... virtually putting an end to the cost vs comfort compromise.

NOTE: Unit temperature rise must not be exceeded for proper unit operation.



VVT® application guidelines (50HJQ014,016)

General — The VVT system is a zoning system that allows a single-zone heating/cooling system to operate as a multiple-zone system. For this system to function correctly and not adversely affect the reliability of the heating/cooling system, the information provided here must be followed.

There are two parts of the VVT system installation that are important for successful operation: the bypass damper and the HVAC (Heating, Ventilation, and Air-Conditioning) equipment configuration settings. The following information will provide important details for these two items as well as specific instructions for the 50HJQ014,016 rooftop units. This information is intended as a supplement to the Installation Instructions shipped with the equipment.

Bypass damper — The bypass damper and controller serve to accomplish two functions in the VVT system. First, the bypass damper keeps supply duct pressure and velocity down at partial load. This permits the VVT system to utilize standard low-velocity, low-pressure supply duckweeds, duct insulation, and duct sealing methods. Without the bypass damper, the restriction of the zone dampers that are closing at partial loads would cause duct static pressure to climb, adding stress to all supply duct materials. Accompanying velocity and noise would create problems in the conditioned space.

Second, when the bypass damper is set up correctly, it ensures that the airflow through the HVAC equipment remains above the minimum required levels. (See capacity ratings for minimum heating cfm required for proper operation of the rooftop heating system. These minimum heating cfm levels must be maintained during all phases of heating operation. The heating cfm values take precedence over listed minimum cooling cfm values.) This permits the use of constant volume rooftop units on VVT applications. Without the bypass damper, the restriction of the zone dampers that are closing at partial loads will reduce the airflow through the unit to below the minimum levels.

The installer is responsible for ensuring that the bypass controller is configured and the system is balanced so that the minimum airflow is higher than 300 cfm/ton (40 L/s per kW). To accomplish proper configuration set the System Setup Enable Function (Category 5, option 7) to ON. This will close the bypass damper and force all of the zone dampers to open. The air balance should be completed after the zones minimum airflow has been set, verifying the total airflow through the equipment is above the minimum airflow level.

VVT bypass design layout — Particular attention must be given to bypass duct layout. It has been a source of VVT system operating problems when neglected. Proper layout consists of the five factors:

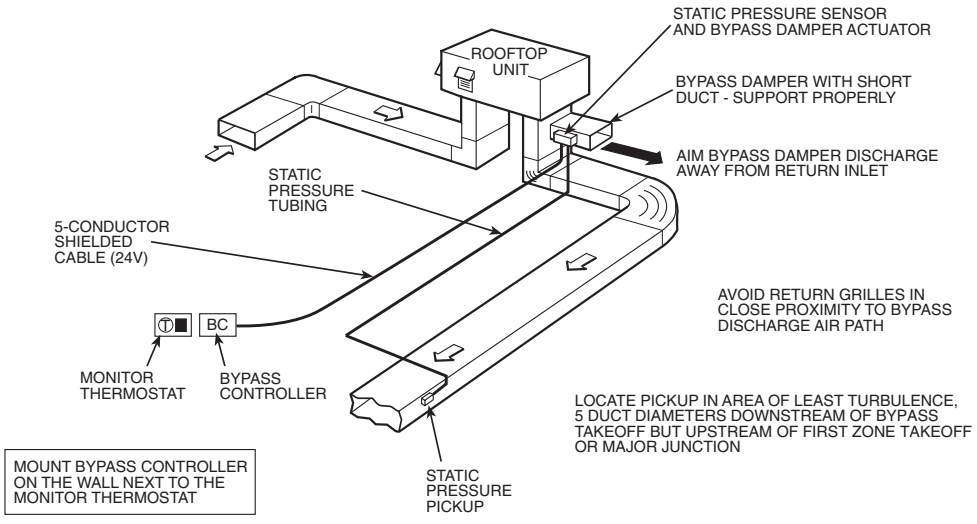
1. Proper location of the bypass
2. Adequately sizing the bypass
3. Avoiding short-circuiting of supply and return air
4. Proper location of the static pickup
5. Facilitating the mixing of bypass air with return air

The recommended location of the bypass damper is for it to duct the bypass air either into the ceiling plenum or into unoccupied spaces. See figure below for a typical installation. This method of installation prevents interference with intended fresh air intake through the unit and economizer operation.

It is highly recommended that the bypass damper is **not** ducted between the rooftop unit's supply duct and the return duct as shown in the diagram below. This type of installation may result in the return duct becoming pressurized causing many problems such as:

- Preventing intended fresh intake for ventilation from entering the unit.
- Preventing proper operation of the economizer and causing mechanical cooling to energize needlessly.
- Preventing proper mixing of bypass air and return air resulting in low return temperatures in cooling, and high return temperature in heating.

VVT BYPASS DESIGN
CEILING PLENUM LAYOUT FOR MANUFACTURING OFFICE


STATIC PRESSURE SENSOR AND BYPASS DAMPER ACTUATOR
ROOFTOP UNIT
BYPASS DAMPER WITH SHORT DUCT - SUPPORT PROPERLY
AIM BYPASS DAMPER DISCHARGE AWAY FROM RETURN INLET
STATIC PRESSURE TUBING
5-CONDUCTOR SHIELDED CABLE (24V)
AVOID RETURN GRILLES IN CLOSE PROXIMITY TO BYPASS DISCHARGE AIR PATH
BC
MONITOR THERMOSTAT
BYPASS CONTROLLER
LOCATE PICKUP IN AREA OF LEAST TURBULENCE, 5 DUCT DIAMETERS DOWNSTREAM OF BYPASS TAKEOFF BUT UPSTREAM OF FIRST ZONE TAKEOFF OR MAJOR JUNCTION
MOUNT BYPASS CONTROLLER ON THE WALL NEXT TO THE MONITOR THERMOSTAT
STATIC PRESSURE PICKUP

Controls (cont)

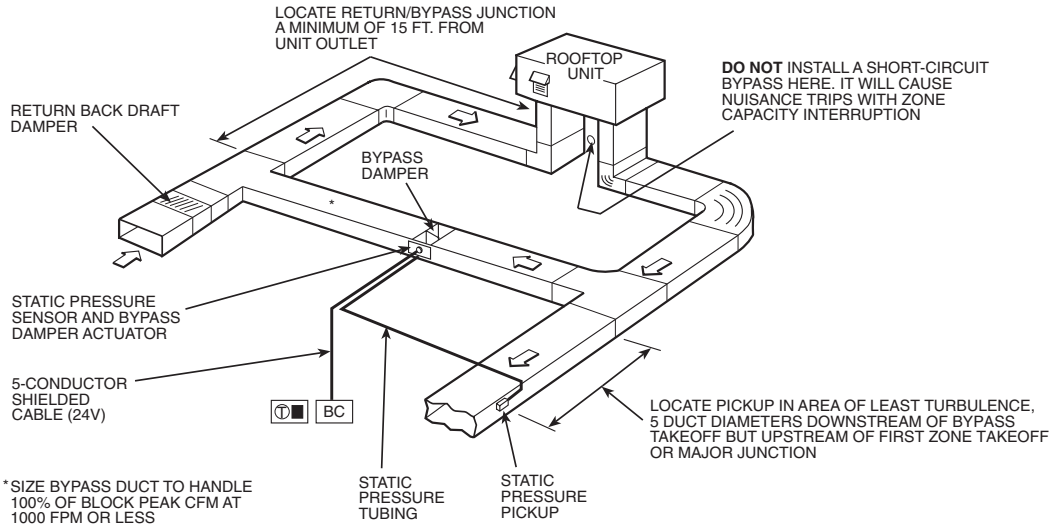
If the diversity within the space does not vary much, then bypass can be installed as shown in the diagram below successfully. Care must be taken to ensure that maximum bypass air at part load conditions does not exceed 25% of the full load airflow.

The bypass junction *must be* installed with sufficient duct length between it and the unit to allow complete mixing of the bypass air an the return air. Without adequate mixing, comfort control will be lost as the equipment will be cycled off and equipment failures may result if left at the extremes. When the HVAC equipment uses an economizer, a back-draft damper needs to be installed between the connection of the bypass duct and the closet room return air grille.

Bypass controller considerations — Besides considering the minimum and maximum cfm's required, as in the system design guidelines, the following are a few system concerns to consider when designing a bypass damper in a VVT® system.

1. The maximum amount of air being bypassed should match an equivalent amount of cfm of unconditioned air based on the ability of the system to unload. For example: If the equipment has two compressors and one unloader, then the refrigeration portion of the equipment is capable of unloading to about 25% of unit capacity. Therefore the designer should make sure the system will use 25% of the system cfm for comfort conditioning and bypass 75% of the conditioned air before energizing the compressors. This will ensure that the system will have enough return air mixing with the bypassed air to keep the compressor running. Make sure that the compressor does not cycle too frequently based on the leaving air temperature limits since this could lessen the reliability of the compressors. The heating equipment will only be able to unload 50%. The system may be designed to cycle based on the leaving air temperature limits depending on the rise designed in the heat exchanger and the amount of outside air being brought in. Although this is not efficient, the equipment reliability should not be a problem.
2. Be sure to verify the pressure drop across the bypass when in full bypass. The bypass should maintain the system pressure without causing 100% of the air to be bypassed. Tables are provided in the Comfort Systems Controls manual which will indicate the sound and performance criteria of Carrier dampers. Calculate bypass of 4500 cfm on a unit with a nominal airflow of 6000 cfm and external static pressure of 0.50 in. wg. The ZD-16 has two entries in the table of 1475 and 1574. Three ZD-16 dampers in parallel could be used for the job. The 16-in. damper will not operate full open to produce these results, so it will be necessary to balance the system and set the maximum damper position to achieve these results in the field.
3. These airflows were tested at 0.50 in. wg and provided NC levels of 42 and 44 respectively. A noise criteria of around 40 would be acceptable for a ducted bypass with internally lined duct but probably not for externally lined ducts since the noise could be transmitted to the return registers. Duct design is important to consider in bypass design since improper noise levels can require the use of other dampers to achieve the same bypassed cfm with reduced noise. For the example above, two 35D, 16-in. dampers can move the same air at a NC level of 29.5 Radiated. These dampers can be ordered with sound attenuators to lessen radiated noise also. Use the damper test criteria to make the selection.
4. If designing a system with an economizer, be sure to include power exhaust on the equipment to prevent conditioned air from migrating out the return registers into the space in a over pressure condition. This condition can be identified since the doors will most likely stand open. The same condition can occur if there is a large exhaust system in the building for labs or restrooms.

VVT BYPASS DESIGN
DUCTED RETURN LAYOUT FOR MANUFACTURING OFFICE


LOCATE RETURN/BYPASS JUNCTION A MINIMUM OF 15 FT. FROM UNIT OUTLET
ROOFTOP UNIT
DO NOT INSTALL A SHORT-CIRCUIT BYPASS HERE. IT WILL CAUSE NUISANCE TRIPS WITH ZONE CAPACITY INTERRUPTION
RETURN BACK DRAFT DAMPER
BYPASS DAMPER
STATIC PRESSURE SENSOR AND BYPASS DAMPER ACTUATOR
5-CONDUCTOR SHIELDED CABLE (24V)
BC
LOCATE PICKUP IN AREA OF LEAST TURBULENCE, 5 DUCT DIAMETERS DOWNSTREAM OF BYPASS TAKEOFF BUT UPSTREAM OF FIRST ZONE TAKEOFF OR MAJOR JUNCTION
*SIZE BYPASS DUCT TO HANDLE 100% OF BLOCK PEAK CFM AT 1000 FPM OR LESS
STATIC PRESSURE TUBING
STATIC PRESSURE PICKUP

Monitor thermostat configuration — The monitor thermostat controls the operation of its own zone and of each associated zone controller. The monitor thermostat determines system operation from the information received from each device that it controls. The monitor thermostat must be configured for proper control of the system. Part of the configuration is Category 4.0, which deals with HVAC settings. The Category 4.0 HVAC Equipment table shows the default settings for this category.

NOTE: In the majority of cases only categories 4.5, 4.6, 4.7, 4.8 and 4.15 will require changing by the installer.

Leaving-air temperature (LAT) monitoring must be always used. This function prevents the HVAC equipment from operating in a range that will cause equipment safety trips, leading to shortened equipment life.

There are tradeoffs involved in the selection of the system mode demand, monitor thermostat configurations 4.15. Lower setting levels tend to improve comfort but tend to increase operating costs and reduce equipment reliability. Buildings that have large core areas that are likely to make a call when others are not should use lower system mode demand levels. For buildings with zones that have more similar load patterns from zone to zone, or smaller zones or more uniformly sized zones, a higher setting should be used.

CATEGORY 4.0 HVAC EQUIPMENT — DEFAULT SETTINGS

SETTING	DESCRIPTION	CURRENT DEFAULT
4.1	Fan Operation	Off
4.2	Time Guard® Device between modes	On
4.3	Time Guard Device Override	Off
4.4	LAT Monitoring	On
4.5	First Stage Cooling Limit (F)	45 F
4.6	Second Stage Cooling Limit	50 F
4.7	First Stage Heating Limit	110 F
4.8	Second Stage Heating Limit	105 F
4.9	Auxiliary Relay (0= No Control, 1=Occupied Schedule, 2=IAQ, 3=Reversing Valve, 4=Economizer)	0
4.10	Optimize Staging	On
4.11	Cooling Temperature lockout	On
4.12	Cooling Lockout Set Point	45 F
4.13	Heating Temperature Lockout	Off
4.14	Heating Lockout Set Point	60 F
4.15	System Mode Demand	3
4.16	System Mode Re-Select (minutes)	30
4.17	Minimum Heat Run Time	5
4.18	Minimum Cool Run Time	3
4.19	Pre-occupancy Purge	Off
4.20	Fan Switch (0=Thermostat Switch Position, 1=Fan Switch On, 2=Fan Switch Off)	0
4.21	Cool Switch (0=Thermostat Switch Position, 1=Cool Switch Auto, 2=Cool Switch Off)	0
4.22	Heat Switch (0=Thermostat Switch Position, 1=Heat Switch Auto, 2=Heat Switch Off)	0

DX coil sensor installation — The use of a DX (direct expansion) coil sensor is recommended. The DX temperature sensor should be installed in the ductwork as close to the equipment as possible. Care must be taken not to have the sensor within "line of sight" of the equipment's heating elements. Radiation from the heat can cause the sensor to read an elevated reading.

The majority of the units referred to by these application guidelines are two compressor units. The monitor thermostat has the ability to read only one DX coil sensor, which can only be installed within the equipment on a single compressor unit. All of the LAT settings have been determined assuming supply duct temperatures versus coil temperatures. Be sure the DX coil sensor option is turned on. Category 5.6 under the monitor configurations, should be ON.

Application guidelines — The units are constant volume units and will require the use a bypass damper and controller. Refer to page 19 for details regarding the use and installation of the bypass damper.

These units use a TXV metering device. Use of optional, factory-installed hot gas bypass (HGBP) is recommended for VVT® applications to aid in low load performance operation.

Electrical connection from the VVT system to the units will be the typical thermostat connections from the relay pack to the unit.

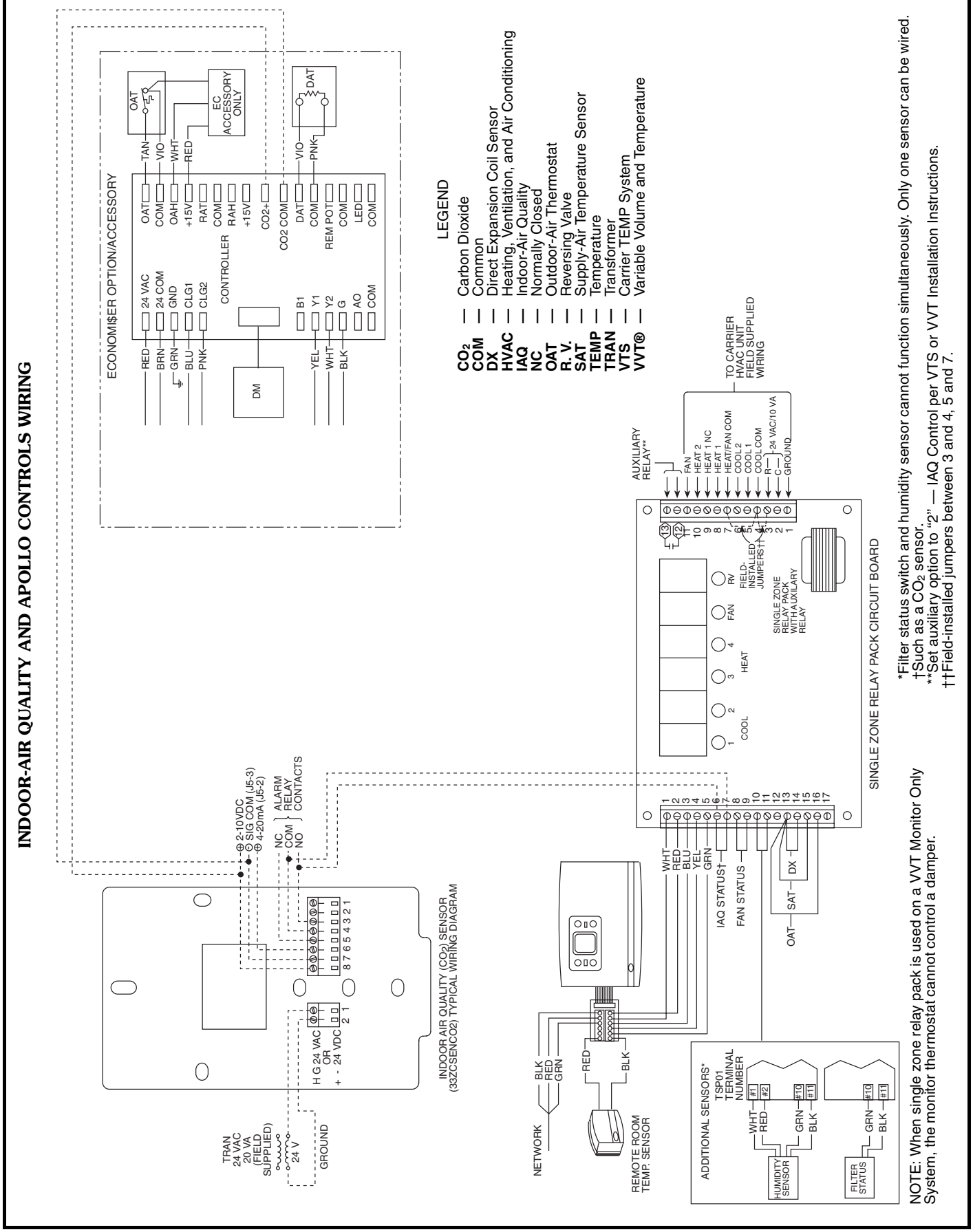
Carrier Apollo controls

The Apollo direct digital controls are ordered as a factory-installed option. Designed and manufactured exclusively by Carrier, the controls can be used to actively monitor and control all modes of operation, as well as to monitor evaporator-fan status, filter status, indoor-air quality (humidity and carbon dioxide), supply-air temperature, outdoor-air temperature, and field-provided sensors.

The Apollo communicating controls are factory-installed into the rooftop unit control box, and come equipped with built-in diagnostic capabilities. Light-emitting diodes (LEDs) simplify troubleshooting by indicating thermostat commands for both stages of heating and cooling, evaporator fan operation, and economizer operation. The Apollo communicating controls are designed to work specifically with the Carrier TEMP and VVT® (variable volume and temperature) thermostats. The Apollo controls allow the use of an IAQ (Indoor-Air Quality) sensor. The Apollo controls, combined with Carrier thermostats, incorporate a 5-minute recycle delay timer between modes of operation to prevent short cycling.

The standard rooftop control system is readily adaptable to all conventional and programmable thermostats. In addition, units are suitable for integration into building monitor control systems if required. This system gives the units the flexibility to communicate with almost any thermostat or building control system.

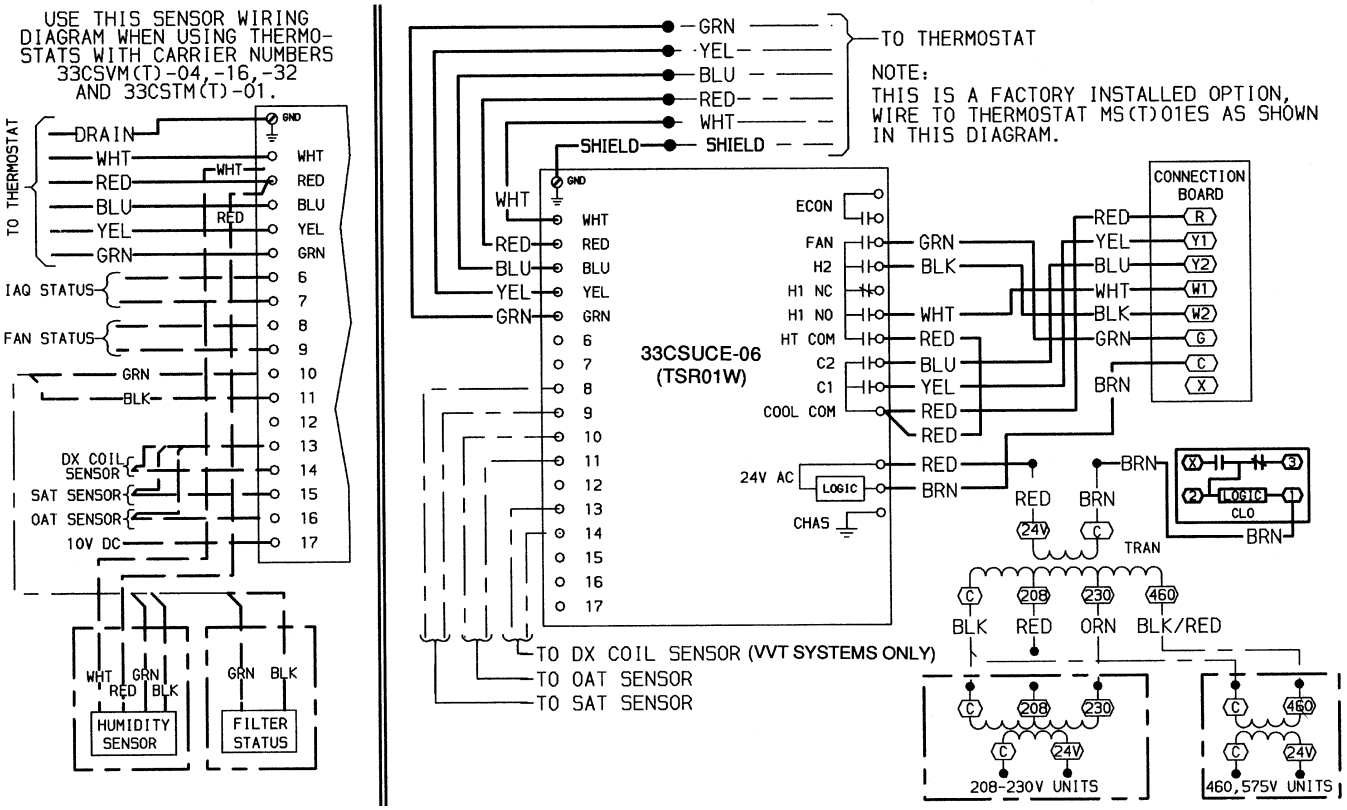
INDOOR-AIR QUALITY AND APOLLO CONTROLS WIRING



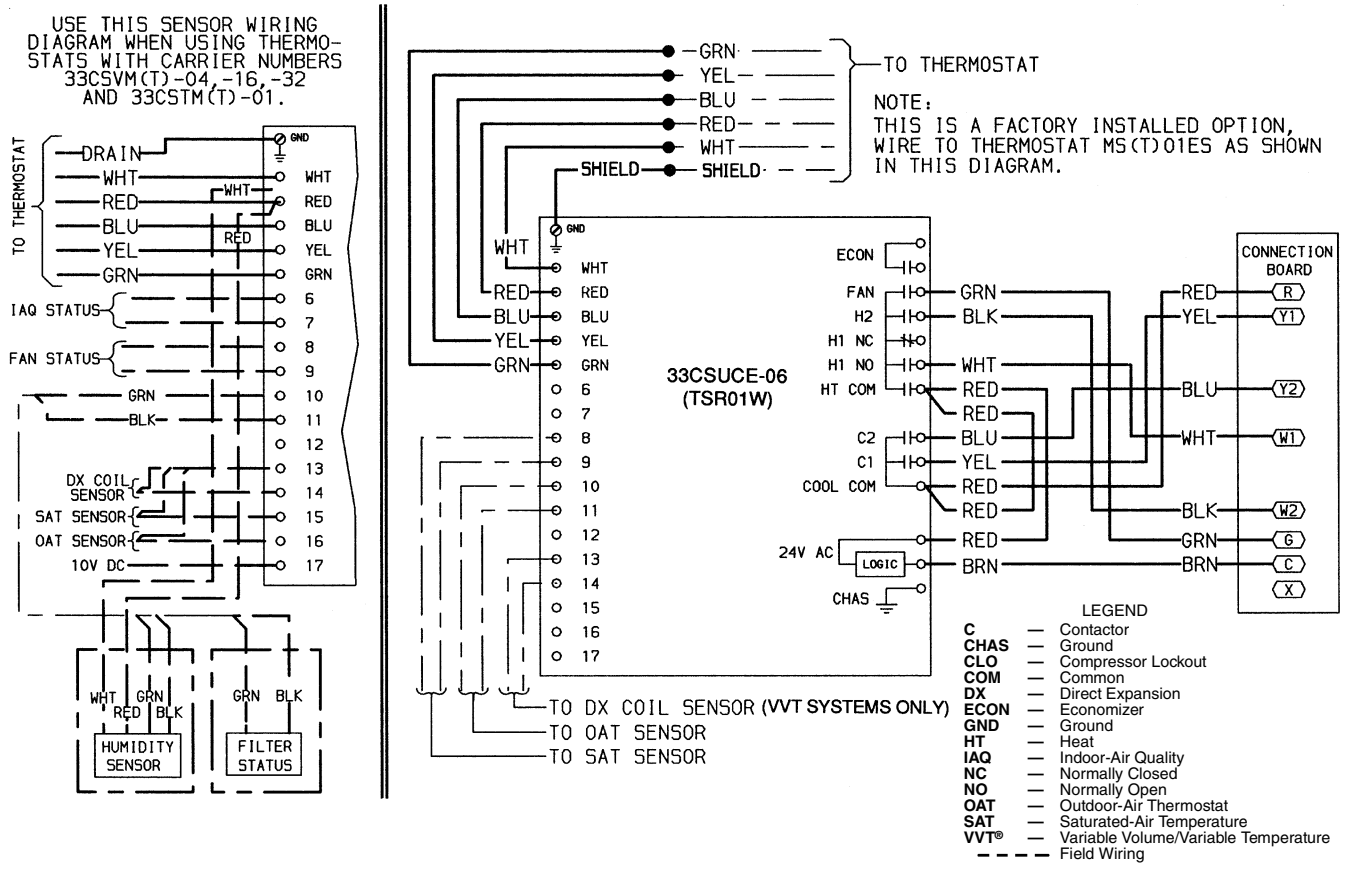
*Filter status switch and humidity sensor cannot function simultaneously. Only one sensor can be wired.
†Such as a CO_2 sensor.
**Set auxiliary option to "2" — IAQ Control per VTS or VVT Installation Instructions.
††Field-installed jumpers between 3 and 4, 5 and 7.

NOTE: When single zone relay pack is used on a VVT Monitor Only System, the monitor thermostat cannot control a damper.

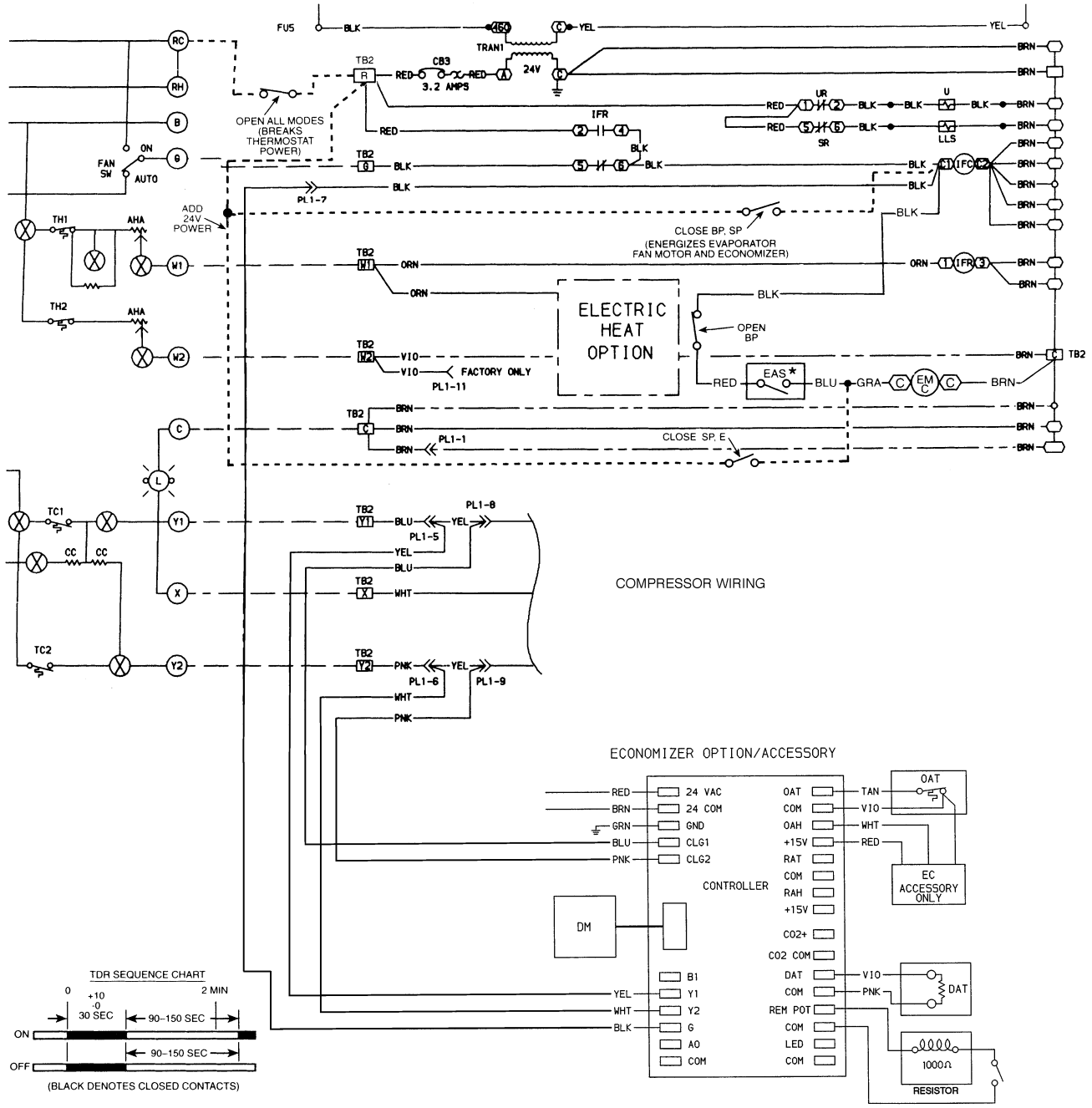
TYPICAL APOLLO THERMOSTAT WIRING — 50HJQ004-012 UNITS



TYPICAL APOLLO THERMOSTAT WIRING — 50TFQ004-012 UNITS



TYPICAL SMOKE CONTROL/FIRE SHUTDOWN WIRING — 50HJQ014,016



LEGEND

- – – – Field Wiring
- Field-Supplied Switch

See Legend on page 25.

*Included in power exhaust accessory.

OPERATING MODES

BP — Building Pressurization: Evaporator fan on, economizer energized to fully open position, power exhaust disabled.
E — Evacuation: Evaporator fan off, economizer energized to fully open position, power exhaust on (open).
SD — Complete Unit Shutdown: Breaks 24-v power to the thermostat.
SP — Smoke Purge: Evaporator fan on, economizer energized to fully open position, power exhaust on.

LEGEND

AHA	—	Adjustable Heat Anticipator
CB	—	Circuit Breaker
CC	—	Cooling Compensator
CLO	—	Compressor Lockout
DM	—	Damper Motor
EAS	—	Economizer Actuator Auxiliary Switch
EMC	—	Economizer Motor Contactor
FU	—	Fuse
IFC	—	Indoor-Fan Contactor
IFCB	—	Indoor-Fan Circuit Breaker
IFR	—	Indoor-Fan Relay
L	—	Light
MAT	—	Mixed-Air Thermostat
OAT	—	Outdoor-Air Thermostat
PL	—	Plug Assembly
SR	—	Solenoid Relay
TB	—	Terminal Block
TC	—	Thermostat Cooling
TH	—	Thermostat Heating
TRAN	—	Transformer

Terminal (Marked)
Terminal (Unmarked)
Terminal Block
Splice
Factory Wiring
Field Wiring
Option/Accessory Wiring
To Indicate Common Potential Only, Not To Represent Wiring

Operating sequence — 50TFQ004-012 and 50HJQ004-012

Cooling, units without economizer — When thermostat calls for cooling, terminals G and Y1 are energized. The indoor-fan contactor (IFC), reversing valve solenoid (RVS1) and compressor contactor no. 1 (C1) are energized and indoor-fan motor, compressor no. 1, and outdoor fans start. The outdoor-fan motor(s) run continuously while unit is cooling. On 50TFQ008-012 units, if the thermostat calls for a second stage of cooling by energizing Y2, compressor contactor no. 2 (C2) and reversing valve solenoid (RVS2) are energized and compressor no. 2 starts.

Heating, units without economizer (50TFQ004-007 and 50HJQ004-007) — Set system switch at AUTO. or HEAT position. Set thermostat at desired temperature.

When the thermostat calls for heat, the IFC, outdoor-fan contactor (OFC), and compressor contactor are energized. The RVS is deenergized and switches position, and the indoor fan, outdoor fan, and compressor are energized.

If the thermostat calls for a second stage of heat, the heater contactor (HC) is energized and starts the electric heaters.

When the space temperature approaches the heating temperature set point, heating stages cycle off. The reversing valve solenoid is reenergized.

Heating, units without economizer (50TFQ008-012 and 50HJQ008,012) — Upon a request for heating from the space thermostat, terminal W1 will be energized with 24 v. The IFC, outdoor-fan contactor (OFC), C1, and C2 will be energized. The reversing valves switch position and the indoor fan, outdoor fan, compressor no. 1, and compressor no. 2 are energized.

If the space temperature continues to fall while W1 is energized, W2 will be energized with 24 v, and the heater contactor(s) (HC) will be energized, which will energize the electric heater(s).

When the space thermostat is satisfied, W2 will be deenergized first, and the electric heater(s) will be deenergized.

Upon a further rise in space temperature, W1 will be deenergized, and the reversing valve solenoids (RVS1 and RVS2) will be energized.

Cooling, units with Durablade economizer — When the outdoor-air temperature is above the outdoor-air thermostat (OAT) setting and the room thermostat calls for cooling, compressor contactor no. 1 is energized to start compressor no. 1 and the outdoor-fan motor(s). RVS1 (reversing valve solenoid) is energized. The indoor-fan motor is energized and the economizer damper moves to the minimum position. Upon a further call for cooling, compressor contactor no. 2 will be energized (50TFQ008-012 and 50HJQ008,012), starting compressor no. 2. RVS2 is energized. After the thermostat is satisfied, the damper moves to the fully closed position.

When the outdoor-air temperature is below the OAT setting and the thermostat calls for cooling, the economizer dampers move to the minimum position. If the supply-air temperature is above 57 F, the damper continues to open until it reaches the fully open position or until the supply-air temperature drops below 52 F.

When the supply-air temperature falls to between 57 F and 52 F, the damper will remain at an intermediate open position. If the supply-air temperature falls below 52 F, the damper will modulate closed until it reaches the minimum position or until the supply-air temperature is above 52 F. When the thermostat is satisfied, the damper will move to the fully closed position.

If the outdoor air alone cannot satisfy the cooling requirements of the conditioned space, economizer cooling is integrated with mechanical cooling, providing second-stage cooling. Compressor no. 1 and the outdoor fan will be energized and the position of the economizer damper will be determined by the supply-air temperature. Compressor no. 2 (50TFQ008-012 and 50HJQ008,012) is locked out.

When the second stage of cooling is satisfied, the compressor, RVS2, and outdoor-fan motor(s) will be deenergized. The damper position will be determined by the supply-air temperature.

When the first stage of cooling is satisfied, the damper will move to fully closed position.

Controls (cont)

**Cooling, units with EconoMi$er (50TFQ004-007 and 50HJQ004-007) —** When the outdoor-air temperature (OAT) is above the ECON SP set point and the room thermostat calls for Stage 1 cooling (R to G + Y1), the indoor-fan motor (IFM) is energized and the EconoMi$er damper modulates to minimum position. The compressor contactor is energized to start the compressor and outdoor-fan motor (OFM) and RVS1 (reversing valve solenoid). After the thermostat is satisfied, the damper modulates to the fully closed position when the IFM is deenergized.

When the OAT is below the ECON SP setting and the room thermostat calls for Stage 1 cooling (R to G + Y1), the EconoMi$er modulates to the minimum position when the IFM is energized. The EconoMi$er provides Stage 1 of cooling by modulating the return and outdoor-air dampers to maintain a 55 F supply air set point. If the supply-air temperature (SAT) is greater than 57 F, the EconoMi$er modulates open, allowing a greater amount of outdoor air to enter the unit. If the SAT drops below 53 F, the outdoor air damper modulates closed to reduce the amount of outdoor air. When the SAT is between 53 and 57 F, the EconoMi$er maintains its position.

If outdoor-air alone cannot satisfy the cooling requirements of the conditioned space, and the OAT is above the MECH CLG LOCKOUT set point, the EconoMi$er integrates free cooling with mechanical cooling. This is accomplished by the strategies below.

NOTE: Compressor has a 2-minute Minimum On, Minimum Off, and Interstage delay timer.

1. If Y1 is energized, and the room thermostat calls for Y2 (2-stage thermostat), the compressor and OFM are energized. The EconoMi$er damper is maintained at its current position.
2. If Y1 is energized for more than 20 minutes, and Y2 is not energized (whether or not a 2-stage thermostat is used), the compressor and OFM are energized. The EconoMi$er damper is maintained at its current position.
3. If Y1 is energized, and the compressor is already energized (see Step 2) and the room thermostat calls for Y2, the compressor continues to operate.
4. If compressor is energized and the thermostat is satisfied, the compressor, the OFM, and IFM are deenergized and the EconoMi$er modulates closed.

When the OAT is below the MECH CLG LOCKOUT set point, the compressors remain off.

**Cooling, units with EconoMi$er (50TFQ008-014 and 50HJQ008,012) —** When the outdoor-air temperature (OAT) is above the ECON SP set point and the room thermostat calls for Stage 1 cooling (R to G + Y1), the indoor-fan motor (IFM) is energized and the EconoMi$er damper modulates to minimum position. The compressor contactor is energized to start the compressor and outdoor-fan motor (OFM) and RVS1 (reversing valve solenoid). After the thermostat is satisfied, the damper modulates to the fully closed position when the IFM is deenergized.

When the OAT is below the ECON SP setting and the room thermostat calls for Stage 1 cooling (R to G + Y1), the EconoMi$er modulates to the minimum position when the IFM is energized. The EconoMi$er provides Stage 1 of cooling by modulating the return and outdoor-air dampers to maintain a 55 F supply air set point. If the supply-air temperature (SAT) is greater than 57 F, the EconoMi$er modulates open, allowing a greater amount of outdoor air to enter the unit. If the SAT drops below 53 F, the outdoor air damper modulates closed to reduce the amount of outdoor air. When the SAT is between 53 and 57 F, the EconoMi$er maintains its position.

If outdoor-air alone cannot satisfy the cooling requirements of the conditioned space, and the OAT is above the MECH CLG LOCKOUT set point, the EconoMi$er integrates free cooling with mechanical cooling. This is accomplished by the strategies below.

NOTE: Compressors have a 2-minute Minimum On, Minimum Off, and Interstage delay timer.

1. If Y1 is energized, and the room thermostat calls for Y2 (2-stage thermostat), compressor no. 1 and OFM are energized. The EconoMi$er damper is maintained at its current position.
2. If Y1 is energized for more than 20 minutes, and Y2 is not energized (whether or not a 2-stage thermostat is used), compressor no. 1 and OFM are energized. The EconoMi$er damper is maintained at its current position.
3. If Y1 is energized, and compressor no. 1 is already energized (see Step 2) and the room thermostat calls for Y2, compressor no. 1 continues to operate. If Y2 remains energized for more than 20 minutes, compressor no. 2 is energized.

NOTE: Compressor no. 2 cannot be energized unless there is a signal for Y2 from the space thermostat.

4. If compressor no. 2 is energized, and the Y2 signal from the thermostat is satisfied, compressor no. 1 and 2 are deenergized. Reasserting Y2 will start compressor no. 1 and (after a 20-minute interstage delay) compressor 2.
5. If compressor no. 1 is energized and the thermostat is satisfied, compressor no. 1, the OFM, and IFM are deenergized and the EconoMi$er modulates closed.

Heating, units with economizer — Upon a call for heat through W1, the IFC energizes to start the evaporator fan and the economizer damper blade opens to the minimum position. If the accessory two-position damper is used, the outdoor-air damper opens to the minimum position whenever the evaporator fan runs. If unit is equipped with 2 stages of heat, when additional heat is needed a call is made through W2.

As space temperature approaches the heating temperature set point, heating stages cycle off. Economizer or two-position damper returns to fully closed position.

Defrost (50TFQ004-007 and 50HJQ004-007) — As frost builds up on the outdoor coil, the coil temperature drops below 28 F. When this outdoor-coil temperature drop is sensed by the defrost thermostat (DFT) and the defrost timer is at the end of a timed period (adjustable at 30, 50, or 90 minutes), the unit operates in a defrost cycle controlled by the defrost timer and thermostat. During this cycle, the reversing valve solenoid (RVS) is energized and the outdoor fan shuts off. The electric heaters (if installed) will be energized.

The unit continues to defrost until the coil temperature as measured by DFT reaches 65 F, or the duration of defrost cycle completes a 10-minute period.

At the end of the defrost cycle, the electric heaters (if installed) and the reversing valve will be deenergized, and the outdoor-fan motor will be energized. The unit will now operate in the Heating mode.

If the thermostat is satisfied during a defrost cycle, the unit will continue in the Defrost mode until the time or temperature constraints are satisfied.

Defrost (50TFQ008-012 and 50HJQ008,012) — When the temperature of the outdoor coil drops below 28 F as sensed by the defrost thermostat (DFT2) and the defrost timer is at the end of a timed period (adjustable at 30, 50, or 90 minutes), reversing valve solenoids (RVS1 and RVS2) are energized and the OFC is deenergized. This switches the position of the reversing valves and shuts off the outdoor fan. The electric heaters (if installed) will be energized.

The unit continues to defrost until the coil temperature as measured by DFT2 reaches 65 F, or the duration of defrost cycle completes a 10-minute period.

During the Defrost mode, if circuit 1 defrosts first, RVS1 will oscillate between Heating and Cooling modes until the Defrost mode is complete.

At the end of the defrost cycle, the electric heaters (if installed) will be deenergized; the reversing valves switch and the outdoor-fan motor will be energized. The unit will now operate in the Heating mode.

If the space thermostat is satisfied during a defrost cycle, the unit will continue in the Defrost mode until the time or temperature constraints are satisfied.

Sequence of operation — 50HJQ014,016

Cooling, units without economizer — With unit main power on, set thermostat to COOL position and desired room temperature. Set fan switch at AUTO. (on demand) or ON (continuous) position.

On a rise in room temperature, cooling contactor no. 1 in the thermostat closes. The indoor and outdoor fan motors start. If the 5-minute compressor time-delay (CTD) on the defrost board (DB) is satisfied, then compressor no. 1 (50HJQ016) or unloaded compressor (50HJQ014) contactor is energized and compressor will start. Compressor cycles on demand of the thermostat to satisfy room conditions. Each time the cooling contactor no. 1 opens, the CTD starts the 5-minute delay.

On 50HJQ016 units, with an additional rise in room temperature, cooling contactor no. 2 in the thermostat closes, energizing compressor contactor no. 2. Compressor no. 2 starts and cycles on demand of the thermostat to satisfy the occupied space demands.

On 50HJQ014 units, compressor runs fully loaded on a call for second-stage cooling.

Cooling, units with economizer — Upon a call for cooling, when outdoor ambient temperature is above the temperature control setting, the indoor and outdoor fans and compressor(s) energize. The economizer damper moves to vent position.

Upon a first-stage call for cooling, when outdoor ambient temperature is below the temperature control setting, the indoor fan starts and economizer damper modulates to maintain mixed-air temperature. The compressor(s) remains off.

Upon a second-stage call for cooling, compressor no. 1 (50HJQ016) or loaded compressor (50HJQ014) is energized and mechanical cooling is integrated with economizer cooling. Compressor no. 2 (50HJQ016) is locked out. If the air temperature is below 50 F, a cooling lockout switch prevents the compressor(s) from running.

When supply-air temperature drops below a fixed set point, the economizer damper modulates to maintain the temperature at the fixed set point.

A freeze protection thermostat (FPT) is located on the indoor coil. It detects frost build-up and turns off the compressor(s), allowing the coil to clear. Once frost has melted, the compressor can be reenergized.

Heating, units without economizer — With unit main power on, set thermostat at HEAT position and desired room temperature. Set fan switch at AUTO. (on demand) or ON (continuous) position.

On a drop in room temperature, heating contactor no. 1 in the thermostat closes, energizing heat relay (HR), reversing valve relay (RVR), reversing valve solenoids (RVS1 and RVS2) and compressor no. 2 contactor. Compressor (size 014) or compressor no. 2 (size 016) and indoor and outdoor fan motors start. If the 5-minute CTD on the DB is satisfied, then compressor no. 1 contactor is energized and compressor no. 1 will start.

On units equipped with electric heat, when additional heat is needed, heating contactor no. 2 in the thermostat closes, energizing W2.

Heating, units with economizer — With unit main power on, set thermostat at HEAT position and desired room temperature. Set fan switch at AUTO. (on demand) or ON (continuous) position.

On a drop in room temperature, heating contactor no. 1 in the thermostat closes, energizing heat relay (HR), reversing valve relay (RVR), reversing valve solenoids (RVS1 and RVS2) and compressor no. 2 contactor. Compressor no. 2 (016) and indoor and outdoor fan motors (014,016) start. If the 5-minute CTD on the DB is satisfied, then compressor (014) or compressor no. 1 (016) contactor is energized and compressor (014) or compressor no. 1 (016) will start. The outdoor-air damper stays at vent position while the indoor fan is operating.

Controls (cont)

On units equipped with electric heat, when additional heat is needed, heating contactor no. 2 in the thermostat closes, energizing W2.

Defrost cycle — When the temperature of the outdoor coil drops below 28 F as sensed by the defrost thermostat (DFT1 or DFT2), the defrost timer starts. At the end of a timed period (field set at 30, 50, or 90 minutes), the defrost cycle will begin. The defrost board energizes terminals O and W2, energizes the defrost relay (DR), deenergizes the reversing valve solenoids (RVS1 and RVS2), and energizes the electric heat. The outdoor-fan motor will stop.

The unit continues to defrost either until the coil temperature as measured by DFT1 or DFT2 reaches 65 F, or until unit completes a 10-minute defrost cycle.

During the defrost mode, when a circuit defrosts, RVS will oscillate between heating and cooling modes until defrost mode is complete. This will prevent the head pressure from getting too high.

At the end of the defrost cycle, the electric heaters (if applicable) will be deenergized, the reversing valve solenoids will be energized, and the outdoor fans will start.

Automatic changeover — When the system selection switch is set at AUTO. position, unit automatically changes from heating operation to cooling operation when the temperature of the conditioned space rises to the cooling level setting. When the temperature of the conditioned space falls to the heating level setting, unit automatically changes from cooling to heating operation (with a 3 F deadband in between).

Continuous air circulation — Turn unit power on. Set system control at OFF position. Set fan switch at ON position. The indoor-fan contactor is energized through the thermostat switch and the indoor fan runs continuously.

Cycle-LOC™ protection — If unit operation is interrupted by an open high-pressure switch, low-pressure switch, indoor coil freezestat, or by compressor internal line-break device (overcurrent or overtemperature), and compressor is calling for either cooling or heating, Cycle-LOC protection device simultaneously locks out unit and lights a warning light on the thermostat. Restart the unit by manually turning thermostat to OFF and then to ON position. If any of the protective devices opens again, the unit continues to lock out until corrective action is taken.

NOTE: If the unit fails to operate due to compressor overcurrent condition, restart by manually resetting circuit breakers at the unit. Restart cannot be accomplished at the room thermostat.

Emergency heat — If compressor is inoperative due to a tripped safety device (high or low pressure, indoor coil freezestat, overcurrent, or overtemperature), the Cycle-LOC device locks out the compressor and lights a warning light on the room thermostat. When the switch is on (thermostat is set to the EM HT position), compressor circuit and outdoor thermostats are bypassed, and the second stage of thermostat energizes the indoor blower and the electric resistance heaters.

Application data

Outdoor installation — Units approved for outdoor installation only.

Ductwork — Secure vertical discharge ductwork to roof curb. For horizontal discharge applications, either attach ductwork to unit, or use field-supplied flanges attached to the horizontal discharge openings and attach all ductwork to flanges.

Horizontal discharge conversion — To convert from vertical discharge to horizontal discharge (Durablade economizer only):

1. Remove economizer or two-position damper to gain access to return duct opening.
2. Move the horizontal-discharge duct opening covers to the vertical discharge openings.
3. Rotate economizer or two-position damper 90 degrees.
4. Rotate the barometric relief damper 90 degrees.
5. Install block-off plate over the opening on the access panel.

**Horizontal EconoMi$er —** A field-installed accessory for horizontal discharge applications. Field-installed power exhaust accessory also available for vertical or horizontal EconoMi$er applications.

Thru-the-bottom power connections — For applications requiring thru-the-bottom connections, Carrier accessory thru-the-bottom package must be purchased to ensure proper connections.

Thermostat — Use of 2-stage heating and cooling thermostat is recommended for all units. A 2-stage cooling thermostat is required on units with accessory economizer to provide integrated cooling. A two-stage thermostat is required for all 50HJQ008-016 units.

Heating-to-cooling changeover — All units are automatic changeover from heating to cooling when automatic changeover thermostat and subbase are used.

Airflow — Units are draw-thru on cooling and blow-thru on heating.

Maximum airflow — To minimize the possibility of condensate blow-off from indoor coil, airflow through units should not exceed 500 cfm/ton.

Application data (cont)

Minimum airflow — For cooling, minimum airflow is 300 cfm/ton. For 50TFQ units with electric heating, required minimum cfm is 900 for 50TFQ004; 1200 for 50TFQ005; 1500 for 50TFQ006; 1800 for 50TFQ007; 2250 for 50TFQ008; 2500 for 50TFQ009; and 3000 for 50TFQ012, with the following exceptions:

UNIT 50TFQ	UNIT VOLTAGE	HEATER kW	UNIT CONFIGURATION	REQUIRED MINIMUM CFM
012	208/230	42.4	Horizontal	3200
	208/230	50.0	Horizontal	3200
	460	50.0	Horizontal or Vertical	3200
008-012	575	17.0	Horizontal or Vertical	2800
		34.0		2350

For 50HJQ units with electric heating, required minimum cfm is 900 for 50HJQ004; 1200 for 50HJQ005; 1500 for 50HJQ006; 1700 for 50HJQ007; 2250 for 50HJQ008; 3000 for 50HJQ012; 3900 for 50HJQ014; and 4500 for 50HJQ016, with the following exceptions:

UNIT 50HJQ	UNIT VOLTAGE	HEATER kW	UNIT CONFIGURATION	REQUIRED MINIMUM CFM
012	208/230	50.0	Horizontal or Vertical	3250
	460	50.0	Horizontal or Vertical	3400

Minimum ambient cooling operating temperature — The minimum temperature for standard units is 25 F. With accessory Motormaster® control, units can operate at outdoor temperatures down to –20 F.

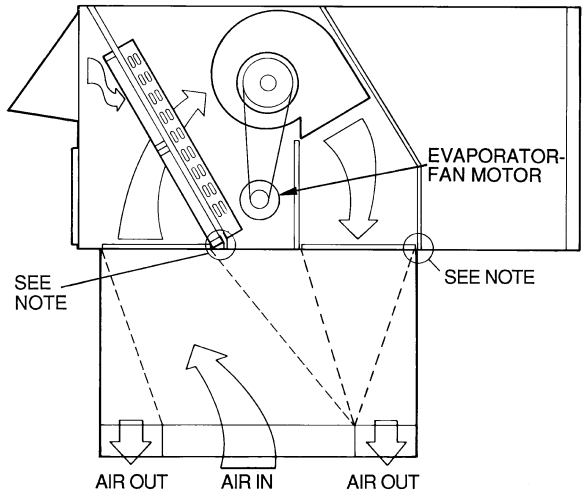
Internal unit design — Due to Carrier's internal unit design (draw-thru over the motor), air path, and specially designed motors, the full horsepower (maximum continuous bhp) listed in the Physical Data table and the notes following each Fan Performance table can be utilized with confidence.

Using Carrier motors with the values listed in the Physical and Fan Performance Data tables *will not* result in nuisance tripping or premature motor failure. The unit warranty will not be affected.

Apollo direct digital controls — The Apollo direct digital controls must be used with either a Carrier master or monitor thermostat.

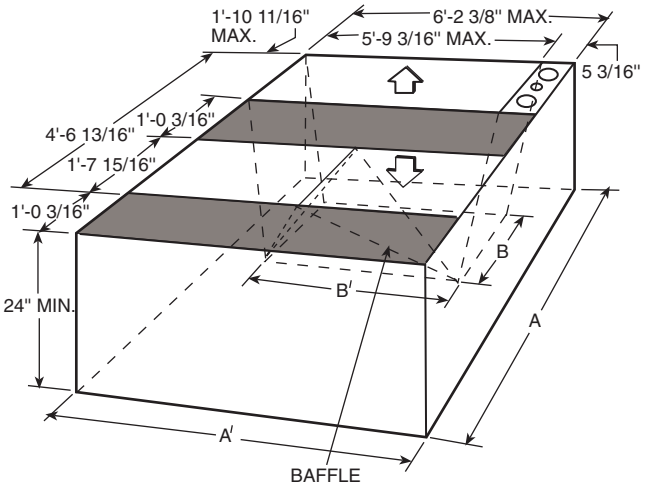
Carrier PremierLink™ controls — The Carrier PremierLink controls can be used with any thermostat.

CONCENTRIC DUCT DISTRIBUTION — 50HJQ014,016



NOTE:
1. Do not drill in this area, damage to basepan may result in water leak.
2. A 90-degree elbow must be provided in the supply ductwork to comply with UL (Underwriters' Laboratories) codes for use with electric heat.

CONCENTRIC DUCT DETAILS — 50HJQ014,016



Shaded area indicates block-off panels.

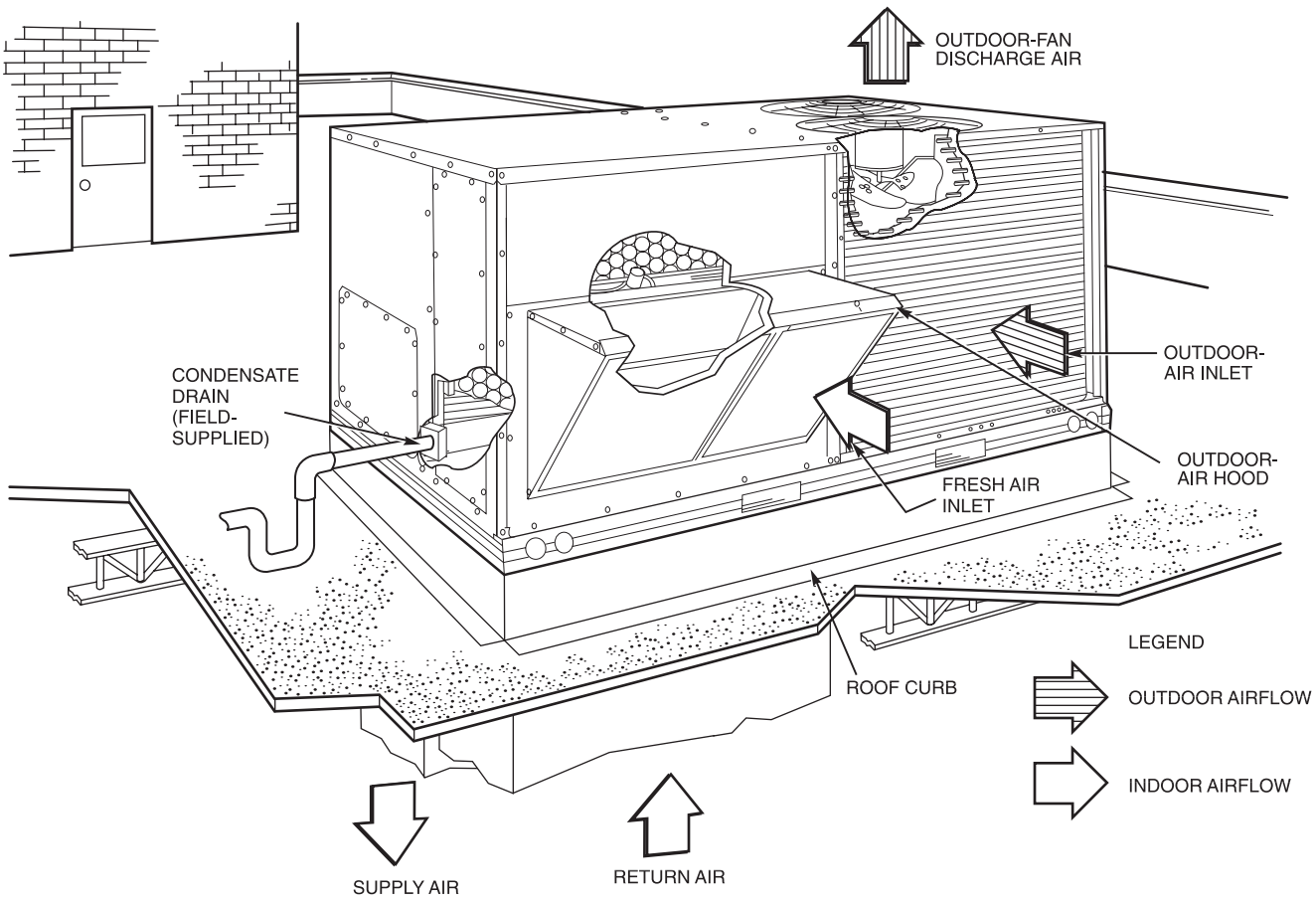
NOTE: Dimensions A, A′ and B, B′ are obtained from field-supplied ceiling diffuser.

⚠ CAUTION

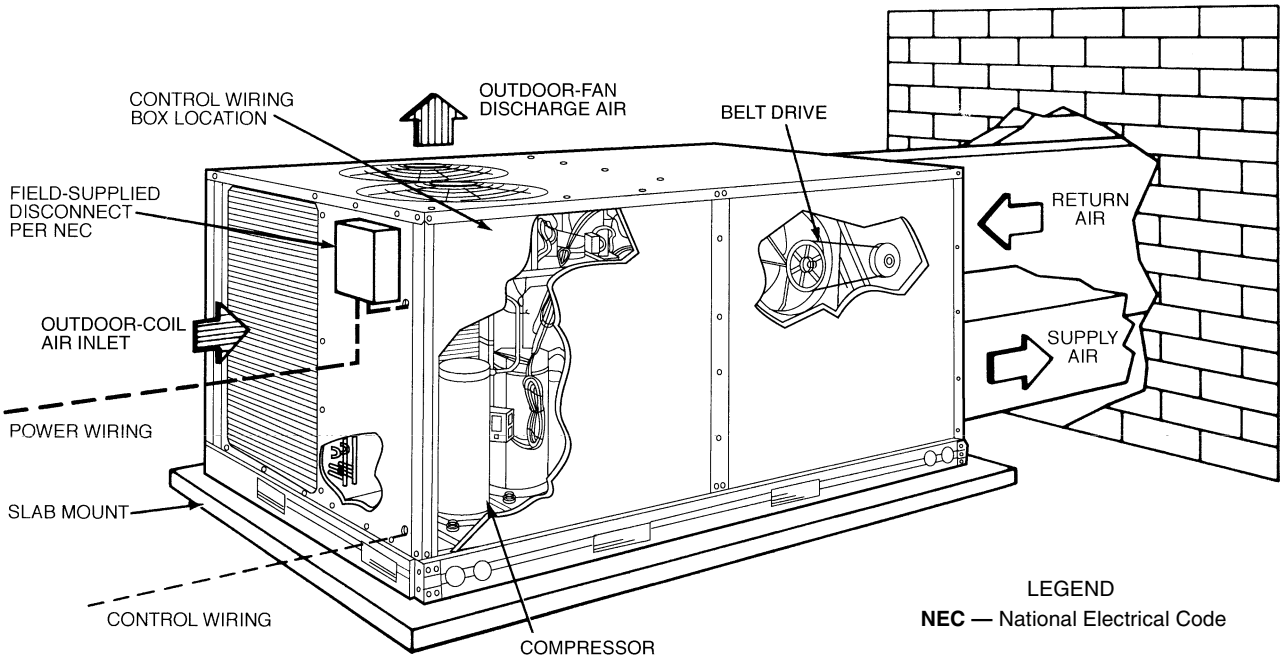
Concentric ducts may only be installed on units without electric heat. Personal injury or unit damage may result.

Typical piping and wiring — 50HJQ004-012 and 50TFQ004-012

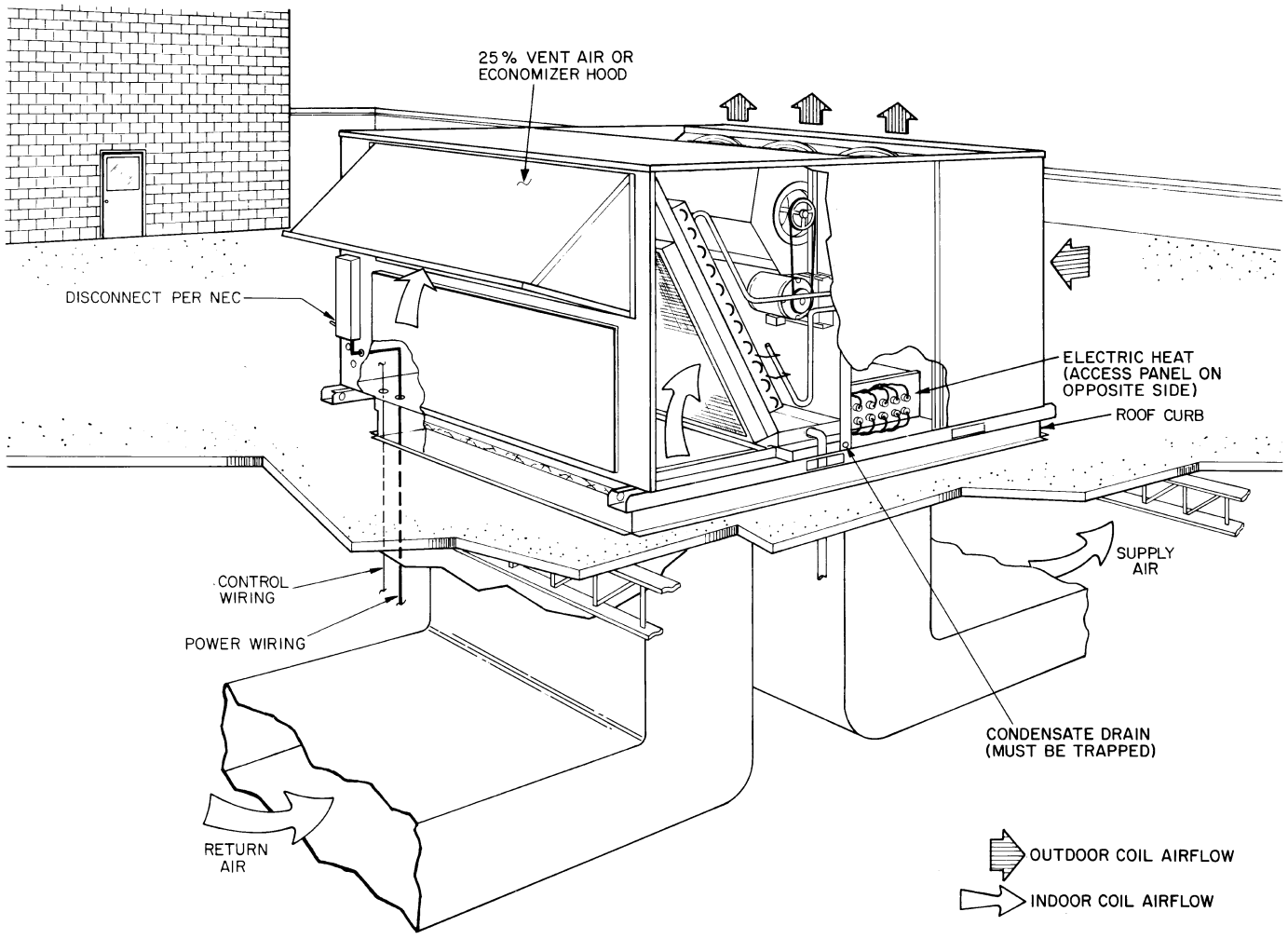
VERTICAL DISCHARGE DUCTING



HORIZONTAL DISCHARGE DUCTING



Typical piping and wiring — 50HJQ014,016



LEGEND

NEC — National Electrical Code

NOTES:

1. Illustration shown is a general guide only and is not intended for or to include all details for any specific installation.
2. Installation must comply with all applicable codes.
3. A 90-degree elbow must be provided in the supply ductwork to comply with UL (Underwriters' Laboratories) codes for use with electric heat.

Model number nomenclature — 50TFQ units

50 TFQ 004 Z - - 5 0 1 AA

50 – Electric Cooling

TFQ – Standard Efficiency Heat Pump

Nominal Capacity
004 – 3 Tons
005 – 4 Tons
006 – 5 Tons
007 – 6 Tons
008 – 7 1/2 Tons
009 – 8 1/2 Tons
012 – 10 Tons

Factory-Installed Communicating Control
- – Standard
K – Novar ETM2024 Control
N – Novar ETM3051 Control
P – Carrier PremierLink™ Rooftop Controller
Z – Apollo Control
For more information about Novar Control option, check with your sales representative.

Coil Fin Options
- – Copper Tube/Aluminum Fin (Both Outdoor and Indoor Coils)
B – Copper Tube/Copper Fin (Both Outdoor and Indoor Coils)
C – Copper Tube/Copper Fin (Outdoor Coil Only)
F – E-Coat Copper Tube/Copper Fin (Both Outdoor and Indoor Coils)
G – E-Coat Copper Tube/Copper Fin (Outdoor Coil Only)
V – Pre-coated Copper Tube/Aluminum Fin (Outdoor Coil Only)

Indoor Fan Motor
- – Standard Fan Motor
A – Alternate Fan Motor/Drive
M – High Static Fan Motor

V-Ph-Hz
1 – 575-3-60
3 – 208/230-1-50†
5 – 208/230-3-60
6 – 460-3-60

Design Series
0 – Original

Packaging
1 – Domestic
3 – Export
6 – LTL

Factory Installed Option Code*

LEGEND
Al — Aluminum
Cu — Copper
FIOP — Factory-Installed Option

*Refer to 50TFQ Price Pages or contact your local Carrier representative for 50TFQ code table.
†Single phase is only available on 5-ton and smaller units.

Quality Assurance

Carrier Corporation
UL REGISTERED FIRM
ISO 9001:2000 #A2325

ARI* capacity ratings

50TFQ004-006

UNIT 50TFQ	NOMINAL TONS	COOLING			HEATING (High Temp)		SOUND RATING (Bels)
		Capacity (Btuh)	SEER†		Capacity (Btuh)	HSPF	
			Belt Drive	Direct Drive			
004	3	35,600	10.20	10.00	34,400	6.7	8.4
005	4	46,500	10.00	9.70	46,500	7.0	8.0
006	5	57,000	10.00	9.90	57,000	7.5	8.2

50TFQ007-012

UNIT 50TFQ	NOMINAL TONS	COOLING		HEATING (High)		HEATING (Low)		IPLV**	SOUND RATING (Bels)
		Capacity (Btuh)	EER	Capacity (Btuh)	COP	Capacity (Btuh)	COP		
007	6	70,000	9.05	72,400	3.20	42,000	2.14	—	8.2
008	7½	86,000	9.00	78,000	3.00	39,000	1.80	9.3	8.6
009	8½	96,000	8.90	96,000	3.00	55,000	2.00	8.85	8.6
012	10	112,000	9.00	105,000	3.10	59,000	2.00	9.0	8.4

LEGEND
Bels — Sound Levels (1 bel = 10 decibels)
COP — Coefficient of Performance
db — dry bulb
EER — Energy Efficiency Ratio
HSPF — Heating Seasonal Performance Factor
IPLV — Integrated Part-Load Values
SEER — Seasonal Energy Efficiency Ratio
wb — wet bulb

*Air Conditioning and Refrigeration Institute.
†Applies only to units with capacity of 60,000 Btuh or less.
**The IPLV applies only to 2-stage heat pump units.

NOTES:
1. Rated in accordance with ARI Standards 210/240-95 and 270-95.
2. Ratings are net values, reflecting the effects of circulating fan heat.
3. ALL the 50HJQ and 50TFQ004,005 and 006 units are in compliance with ASHRAE 90.1 2001 Energy Standard for minimum SEER and EER requirements. Refer to state and local codes or visit the following website: http://solstice.crest.org/efficiency/bcap to determine if compliance with this standard pertains to a given geographical area of the United States.

California, Maryland, Washington, Wyoming, Massachusetts and various local and state building codes adopted the ASHRAE 90.1 efficiency standard on October 29, 2001.

4. Ratings are based on:
Cooling Standard: 80 F db, 67 F wb indoor entering-air temperature and 95 F db air entering outdoor unit.
IPLV Standard: 80 F db, 67 F wb indoor entering-air temperature and 80 F db outdoor entering-air temperature.
High-Temp Heating Standard: 70 F db indoor entering-air temperature and 47 F db, 43 F wb outdoor entering-air temperature.
Low-Temp Heating Standard: 70 F db indoor entering-air temperature and 17 F db, 15 F wb outdoor entering-air temperature.

Physical data — 50TFQ004-007

UNIT SIZE 50TFQ		004	005	006	007
NOMINAL CAPACITY (tons)		3	4	5	6
OPERATING WEIGHT (lb)					
Unit		500	520	550	590
Economizer					
Durablade		34	34	34	34
EconoMi$er		47	47	47	47
Roof Curb*		115	115	115	115
COMPRESSOR		Hermetic			
Quantity		1	1	1	1
Oil (oz)		45	54	50	54
REFRIGERANT TYPE		R-22			
Operating Charge (lb-oz)					
Circuit 1		5-1	6-0	8-0	11-2
Circuit 2		—	—	—	—
OUTDOOR COIL		Enhanced Copper Tubes, Aluminum Lanced Fins, Acutrol™ Metering Device			
Rows...Fins/in.		1...17	1...17	2...17	2...17
Total Face Area (sq ft)		10.31	14.58	12.25	16.53
OUTDOOR FAN		Propeller Type			
Nominal Cfm		4000	4000	4000	4000
Quantity...Diameter (in.)		1...22.0	1...22.0	1...22.0	1...22.0
Motor Hp...Rpm		1/4...1100	1/4...1100	1/4...1100	1/4...1100
Watts Input (Total)		325	325	325	325
INDOOR COIL		Enhanced Copper Tubes, Aluminum Double-Wavy Fins, Acutrol Metering Device			
Rows...Fins/in.		2...15	2...15	3...15	3...15
Total Face Area (sq ft)		4.2	4.2	5.5	5.5
INDOOR FAN		Centrifugal Type			
Quantity...Size (in.)	Std	1...10 x 10	1...10 x 10	1...11 x 10	1...10 x 10
	Alt	1...10 x 10	1...10 x 10	1...10 x 10	—
	High-Static	1...10 x 10	1...10 x 10	1...10 x 10	1...10 x 10
Type Drive	Std	Direct	Direct	Direct	Belt
	Alt	Belt	Belt	Belt	—
	High-Static	Belt	Belt	Belt	Belt
Nominal Cfm		1200	1600	2000	2400
Maximum Continuous Bhp	Std	.34	.75	1.20	2.40
	Alt	1.00	1.00	1.30/2.40†	—
	High-Static	2.40	2.40	2.90	2.90
Motor Frame Size	Std	48	48	48	56
	Alt	48	48	56	—
	High-Static	56	56	56	56
Nominal Rpm High/Low	Std	860/800	1075/970	1075/970	—
	Alt	1620	1620	1725	—
	High-Static	1725	1725	1725	1725
Fan Rpm Range	Std	—	—	—	1070-1460
	Alt	760-1000	835-1185	900-1300	—
	High-Static	1075-1455	1075-1455	1300-1685	1300-1685
Motor Bearing Type		Ball	Ball	Ball	Ball
Maximum Allowable Rpm		2100	2100	2100	2100
Motor Pulley Pitch Diameter Min/Max (in.)	Std	—	—	—	2.8/3.8
	Alt	1.9/2.9	1.9/2.9	2.4/3.4	—
	High-Static	2.8/3.8	2.8/3.8	3.4/4.4	3.4/4.4
Nominal Motor Shaft Diameter (in.)	Std	1/2	1/2	1/2	5/8
	Alt	1/2	1/2	5/8	—
	High-Static	5/8	5/8	5/8	5/8
Fan Pulley Pitch Diameter (in.)	Std	—	—	—	4.5
	Alt	4.5	4.0	4.5	—
	High-Static	4.5	4.5	4.5	4.5
Belt, Quantity...Type...Length (in.)	Std	—	—	—	1...A...40
	Alt	1...A...34	1...A...34	1...A...39	—
	High-Static	1...A...39	1...A...39	1...A...40	1...A...40
Pulley Center Line Distance (in.)	Std	—	—	—	14.7-15.5
	Alt	10.0-12.4	10.0-12.4	14.7-15.5	—
	High-Static	10.0-12.4	10.0-12.4	14.7-15.5	14.7-15.5
Speed Change per Full Turn of Movable Pulley Flange (rpm)	Std	—	—	—	80
	Alt	48	70	80	—
	High-Static	65	65	60	60
Movable Pulley Maximum Full Turns From Closed Position	Std	—	—	—	5
	Alt	5	5	5	—
	High-Static	6	6	5	5
Factory Setting	Std	—	—	—	3
	Alt	3	3	3	—
	High-Static	3 1/2	3 1/2	3 1/2	3 1/2
Factory Speed Setting (rpm)	Std	—	—	—	1225
	Alt	856	975	1060	—
	High-Static	1233	1233	1396	1396
Fan Shaft Diameter at Pulley (in.)		5/8	5/8	5/8	5/8
HIGH-PRESSURE SWITCH (psig)					
Standard Compressor Internal Relief (Differential)		450 ± 50			
Cutout		428			
Reset (Auto.)		320			
LOSS-OF-CHARGE SWITCH (psig)					
Cutout		7 ± 3			
Reset (Auto.)		22 ± 7			
FREEZE-PROTECTION THERMOSTAT (F)					
Opens		30 ± 5			
Closes		45 ± 5			
OUTDOOR-AIR INLET SCREENS		Cleanable			
Quantity...Size (in.)		1...20 x 24 x 1			
RETURN-AIR FILTERS		Throwaway			
Quantity...Size (in.)		2...16 x 25 x 2			

LEGEND

Bhp — Brake Horsepower

*Weight of 14-in. roof curb.
†Single phase/three phase.

NOTE: The 50TFQ units have a loss-of-charge switch located in the liquid line.

Physical data — 50TFQ008-012

UNIT SIZE 50TFQ		008	009	012
NOMINAL CAPACITY (tons)		7 1/2	8 1/2	10
OPERATING WEIGHT (lb)				
Unit		940	965	1015
Economizer				
Durablade		44	44	44
EconoMi$er		62	62	62
Roof Curb*		143	143	143
COMPRESSOR			Hermetic	
Quantity		2	2	2
Oil (oz)		45 ea	54 ea	54 ea
REFRIGERANT TYPE			R-22	
Operating Charge (lb-oz)				
Circuit 1		5-14	8- 6	7-14
Circuit 2		5-13	8-13	8- 3
OUTDOOR COIL			Enhanced Copper Tubes, Aluminum Lanced Fins Acutrol™ Metering Device	
Rows...Fins/in.		1...17	2...17	2...17
Total Face Area (sq ft)		20.50	18.00	18.30
OUTDOOR FAN			Propeller Type	
Nominal Cfm		6500	6500	6500
Quantity...Diameter (in.)		2...22	2...22	2...22
Motor Hp...Rpm		1/4...1100	1/4...1100	1/4...1100
Watts Input (Total)		500	500	500
INDOOR COIL			Enhanced Copper Tubes, Aluminum Double-Wavy Fins, Acutrol Metering Device	
Rows...Fins/in.		3...15	3...15	3...15
Total Face Area (sq ft)		8.0	8.0	11.1
INDOOR FAN			Centrifugal Type	
Quantity...Size (in.)	Std	1...15 x 15	1...15 x 15	1...15 x 15
	Alt	1...15 x 15	—	1...15 x 15
	High-Static	1...15 x 15	1...15 x 15	1...15 x 15
Type Drive	Std	Belt	Belt	Belt
	Alt	Belt	—	Belt
	High-Static	Belt	Belt	Belt
Nominal Cfm		3000	3600	4000
Maximum Continuous Bhp	Std	2.40	2.40	2.40
	Alt	2.40	—	2.90
	High-Static	3.70	3.70	5.25
Motor Frame Size	Std	56	56	56
	Alt	56	—	56
	High-Static	56	56	56
Nominal Rpm High/Low	Std	—	—	—
	Alt	—	—	—
	High-Static	1725	1725	1725
Fan Rpm Range	Std	590- 840	685- 935	685- 935
	Alt	685- 935	—	835-1085
	High-Static	860-1080	860-1080	830-1130
Motor Bearing Type		Ball	Ball	Ball
Maximum Allowable Rpm		2100	2100	2100
Motor Pulley Pitch Diameter Min/Max (in.)	Std	2.4/3.4	2.8/3.8	2.8/3.8
	Alt	2.8/3.8	—	3.4/4.4
	High-Static	4.0/5.0	4.0/5.0	2.8/3.8
Nominal Motor Shaft Diameter (in.)	Std	5/8	5/8	5/8
	Alt	5/8	—	7/8
	High-Static	7/8	7/8	7/8
Fan Pulley Pitch Diameter (in.)	Std	7.0	7.0	7.0
	Alt	7.0	—	7.0
	High-Static	8.0	8.0	5.8
Belt, Quantity...Type...Length (in.)	Std	1...A...49	1...A...49	1...A...49
	Alt	1...A...49	—	1...A...49
	High-Static	1...A...55	1...A...55	1...BX...46
Pulley Center Line Distance (in.)	Std	16.75-19.25	16.75-19.25	15.85-17.50
	Alt	15.75-19.25	—	15.85-17.50
	High-Static	15.75-19.25	16.75-19.25	15.85-17.50
Speed Change per Full Turn of Movable Pulley Flange (rpm)	Std	50	50	50
	Alt	50	—	50
	High-Static	60	60	60
Movable Pulley Maximum Full Turns From Closed Position	Std	5	5	5
	Alt	5	—	5
	High-Static	5	5	6
Factory Setting	Std	5	5	5
	Alt	5	—	5
	High-Static	5	5	5
Factory Speed Setting (rpm)	Std	590	685	685
	Alt	685	—	835
	High-Static	860	860	887
Fan Shaft Diameter at Pulley (in.)		1	1	1
HIGH-PRESSURE SWITCH (psig)				
Standard Compressor Internal Relief (Differential)			450 ± 50	
Cutout			428	
Reset (Auto.)			320	
LOSS-OF-CHARGE SWITCH (psig)				
Cutout			7 ± 3	
Reset (Auto.)			22 ± 5	
FREEZE-PROTECTION THERMOSTAT (F)				
Opens			30 ± 5	
Closes			45 ± 5	
OUTDOOR-AIR INLET SCREENS			Cleanable	
Quantity...Size (in.)			1...20 x 25 x 1 1...16 x 25 x 1	
RETURN-AIR FILTERS			Throwaway	
Quantity...Size (in.)		4...16 x 20 x 2	4...16 x 20 x 2	4...20 x 20 x 2

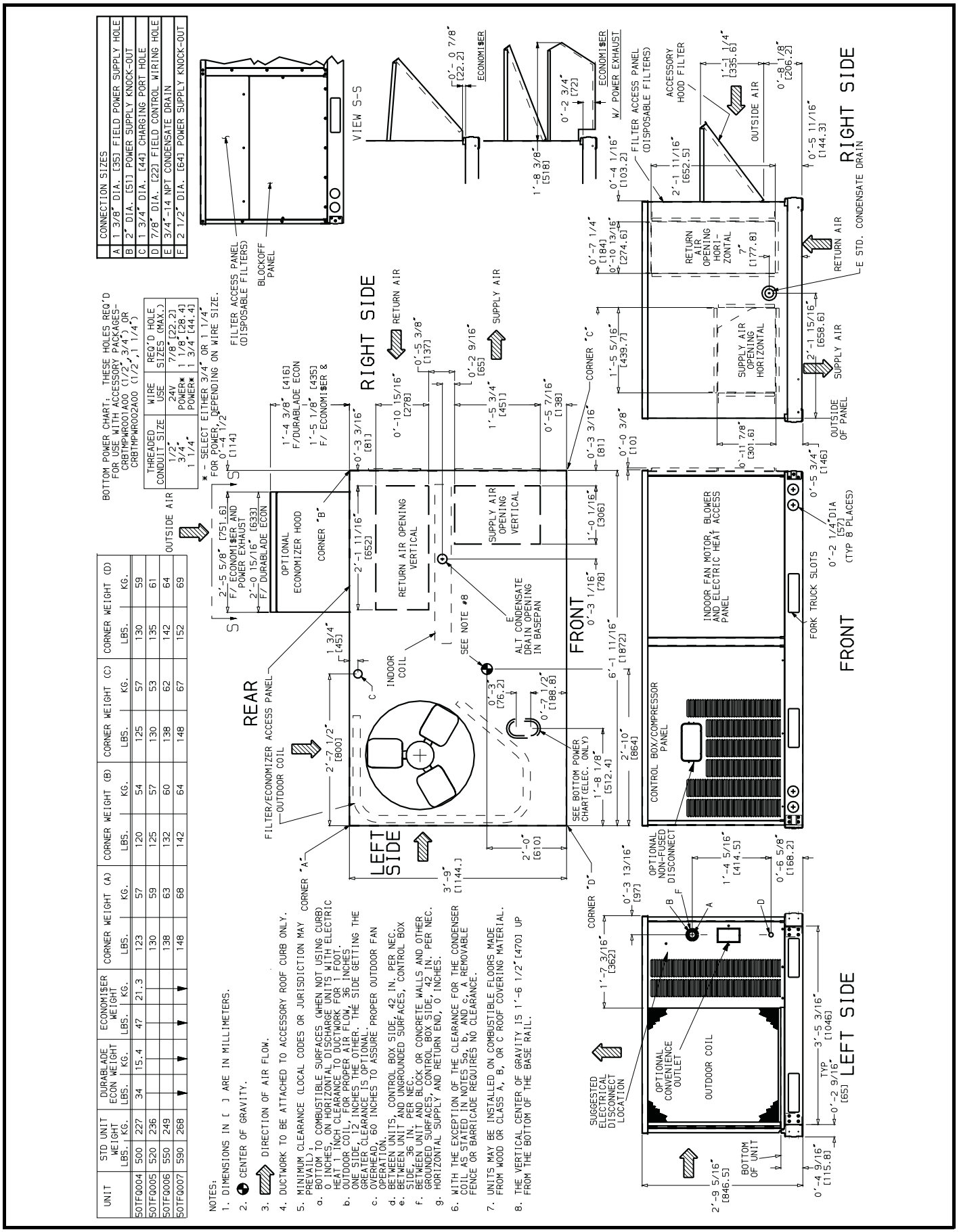
LEGEND

Bhp — Brake Horsepower

*Weight of 14-in. roof curb.

NOTE: The 50TFQ units have a loss-of-charge switch located in the liquid line.

Base unit dimensions — 50TFQ004-007



UNIT	STD UNIT WEIGHT LBS.	STD UNIT WEIGHT KG.	DURABLADE ECON WEIGHT LBS.	DURABLADE ECON WEIGHT KG.	ECONOMI$ER WEIGHT LBS.	ECONOMI$ER WEIGHT KG.	CORNER WEIGHT (A) LBS.	CORNER WEIGHT (A) KG.	CORNER WEIGHT (B) LBS.	CORNER WEIGHT (B) KG.	CORNER WEIGHT (C) LBS.	CORNER WEIGHT (C) KG.	CORNER WEIGHT (D) LBS.	CORNER WEIGHT (D) KG.
50TFQ004	500	227	34	15.4	47	21.3	123	57	120	54	125	57	130	59
50TFQ005	520	236					130	59	125	57	130	53	135	61
50TFQ006	550	249					138	63	132	60	138	62	142	64
50TFQ007	590	268	▼	▼	▼	▼	148	68	142	64	148	67	152	69

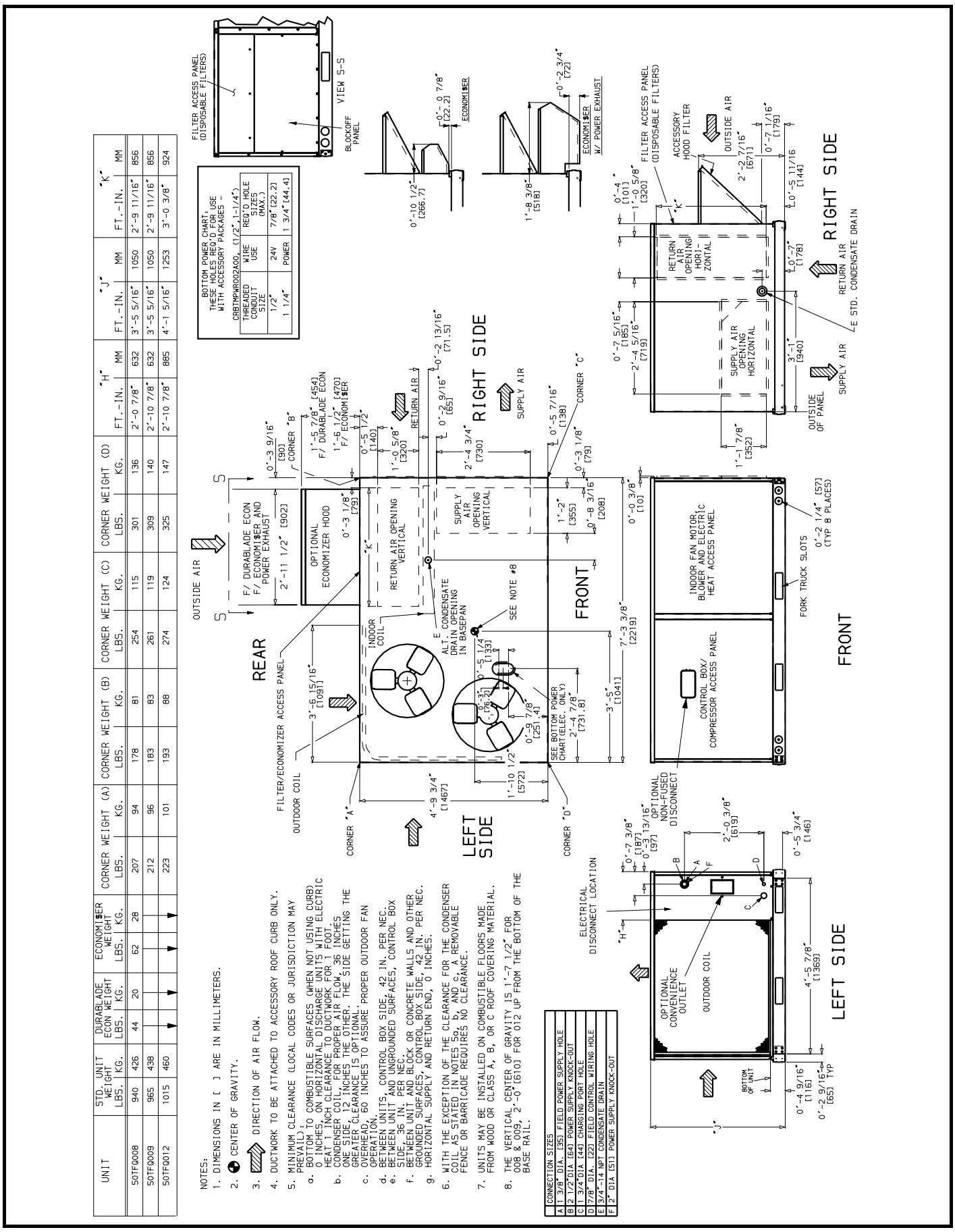
NOTES:
1. DIMENSIONS IN [ ] ARE IN MILLIMETERS.
2. ⊕ CENTER OF GRAVITY.
3. ⇨ DIRECTION OF AIR FLOW.
4. DUCTWORK TO BE ATTACHED TO ACCESSORY ROOF CURB ONLY.
5. MINIMUM CLEARANCE (LOCAL CODES OR JURISDICTION MAY PREVAIL):
   a. BOTTOM TO COMBUSTIBLE SURFACES (WHEN NOT USING CURB) 0 INCHES, ON HORIZONTAL DISCHARGE UNITS WITH ELECTRIC HEAT 1 INCH CLEARANCE TO DUCTWORK FOR 1 FOOT.
   b. OUTDOOR COIL, FOR PROPER AIR FLOW, 36 INCHES ONE SIDE, 12 INCHES THE OTHER. THE SIDE GETTING THE GREATER CLEARANCE IS OPTIONAL.
   c. OVERHEAD, 60 INCHES TO ASSURE PROPER OUTDOOR FAN OPERATION.
   d. BETWEEN UNITS, CONTROL BOX SIDE, 42 IN. PER NEC.
   e. BETWEEN UNIT AND UNGROUNDED SURFACES, CONTROL BOX SIDE, 36 IN. PER NEC.
   f. BETWEEN UNIT AND BLOCK OR CONCRETE WALLS AND OTHER GROUNDED SURFACES, CONTROL BOX SIDE, 42 IN. PER NEC.
   g. HORIZONTAL SUPPLY AND RETURN END, 0 INCHES.
6. WITH THE EXCEPTION OF THE CLEARANCE FOR THE CONDENSER COIL AS STATED IN NOTES 5a, b, AND c, A REMOVABLE FENCE OR BARRICADE REQUIRES NO CLEARANCE.
7. UNITS MAY BE INSTALLED ON COMBUSTIBLE FLOORS MADE FROM WOOD OR CLASS A, B, OR C ROOF COVERING MATERIAL.
8. THE VERTICAL CENTER OF GRAVITY IS 1'-6 1/2" [470] UP FROM THE BOTTOM OF THE BASE RAIL.

Base unit dimensions — 50TFQ008-012

UNIT	STD. UNIT WEIGHT		DURABLADE ECON WEIGHT		ECONOMI$ER WEIGHT		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		"H"		"J"		"K"	
	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	FT.-IN.	MM	FT.-IN.	MM	FT.-IN.	MM
50TFQ008	940	426	44	20	62	28	207	94	178	81	254	115	301	136	2'-0 7/8"	632	3'-5 5/16"	1050	2'-9 11/16"	856
50TFQ009	965	438					212	96	183	83	261	119	309	140	2'-10 7/8"	632	3'-5 5/16"	1050	2'-9 11/16"	856
50TFQ012	1015	460	▼	▼	▼	▼	223	101	193	88	274	124	325	147	2'-10 7/8"	885	4'-1 5/16"	1253	3'-0 3/8"	924

NOTES:
1. DIMENSIONS IN [ ] ARE IN MILLIMETERS.
2. ◒ CENTER OF GRAVITY.
3. ⇨ DIRECTION OF AIR FLOW.
4. DUCTWORK TO BE ATTACHED TO ACCESSORY ROOF CURB ONLY.
5. MINIMUM CLEARANCE (LOCAL CODES OR JURISDICTION MAY PREVAIL):
   a. BOTTOM TO COMBUSTIBLE SURFACES (WHEN NOT USING CURB), 0 INCHES, ON HORIZONTAL DISCHARGE UNITS WITH ELECTRIC HEAT 1 INCH CLEARANCE TO DUCTWORK FOR 1 FOOT.
   b. CONDENSER COIL, FOR PROPER AIR FLOW, 36 INCHES ONE SIDE, 12 INCHES THE OTHER. THE SIDE GETTING THE GREATER CLEARANCE IS OPTIONAL.
   c. OVERHEAD, 60 INCHES TO ASSURE PROPER OUTDOOR FAN OPERATION.
   d. BETWEEN UNITS, CONTROL BOX SIDE, 42 IN. PER NEC.
   e. BETWEEN UNIT AND UNGROUNDED SURFACES, CONTROL BOX SIDE, 36 IN. PER NEC.
   f. BETWEEN UNIT AND BLOCK OR CONCRETE WALLS AND OTHER GROUNDED SURFACES, CONTROL BOX SIDE, 42 IN. PER NEC.
   g. HORIZONTAL SUPPLY AND RETURN END, 0 INCHES.
6. WITH THE EXCEPTION OF THE CLEARANCE FOR THE CONDENSER COIL AS STATED IN NOTES 5a, b, AND c, A REMOVABLE FENCE OR BARRICADE REQUIRES NO CLEARANCE.
7. UNITS MAY BE INSTALLED ON COMBUSTIBLE FLOORS MADE FROM WOOD OR CLASS A, B, OR C ROOF COVERING MATERIAL.
8. THE VERTICAL CENTER OF GRAVITY IS 1'-7 1/2" FOR 008 & 009, 2'-0" [610] FOR 012 UP FROM THE BOTTOM OF THE BASE RAIL.

CONNECTION SIZES
A 1 3/8" DIA. [35] FIELD POWER SUPPLY HOLE
B 2 1/2" DIA. [64] POWER SUPPLY KNOCK-OUT
C 1 3/4" DIA. [44] CHARGING PORT HOLE
D 7/8" DIA. [22] FIELD CONTROL WIRING HOLE
E 3/4"-14 NPT CONDENSATE DRAIN
F 2" DIA. [51] POWER SUPPLY KNOCK-OUT

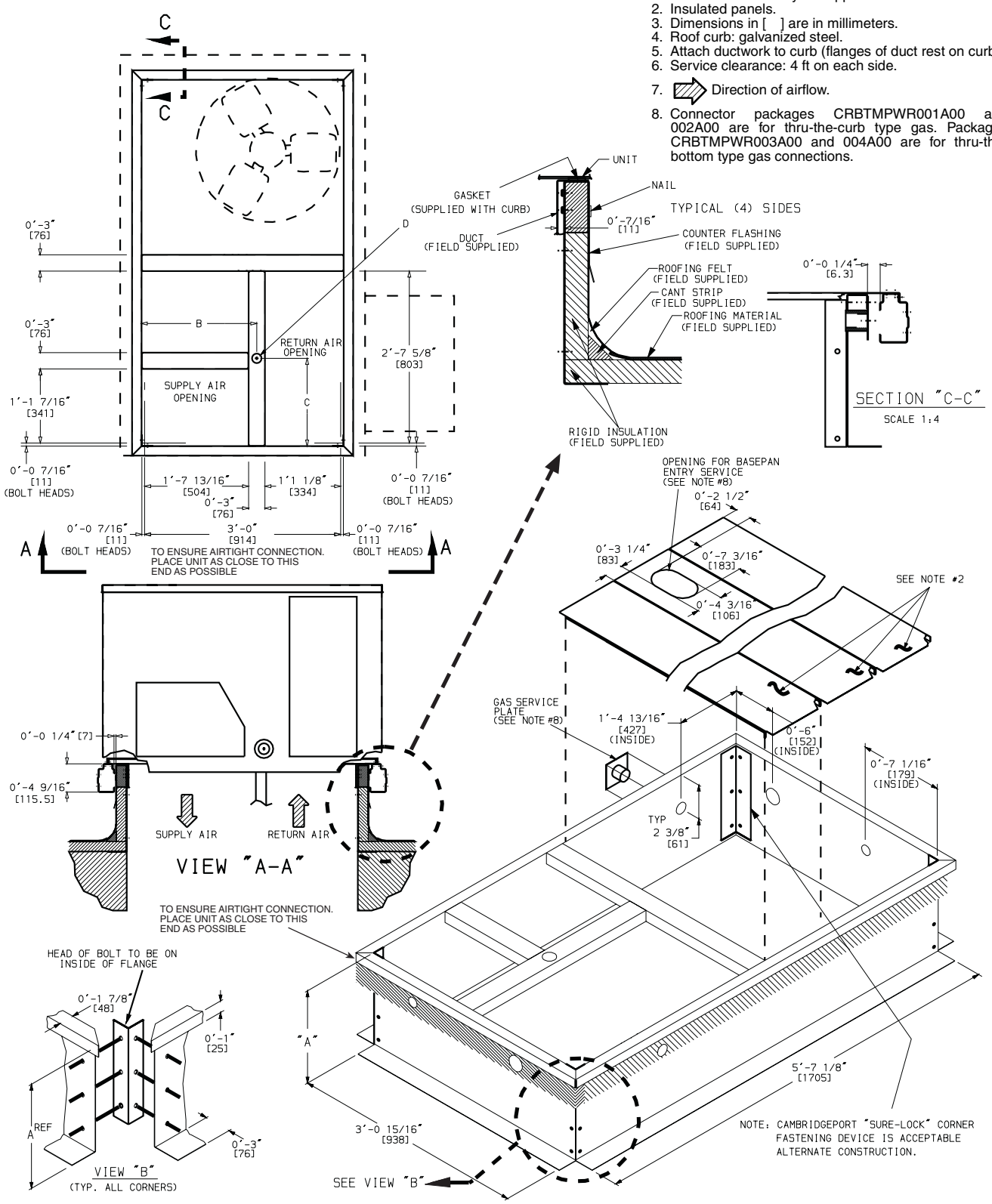


Accessory dimensions — 50TFQ004-007

CONNECTOR PKG. ACCY.	B	C	D ALT DRAIN HOLE	GAS	POWER	CONTROL
CRBTMPWR001A00	1′-9 11/16″ [551]	1′-4″ [406]	1 3/4″ [44.5]	3/4″ [19] NPT	3/4″ [19] NPT	1/2″ [12.7]
CRBTMPWR002A00					1 1/4″ [31.7]	
CRBTMPWR003A00				1/2″ [12.7] NPT	3/4″ [19] NPT	1/2″ [12.7]
CRBTMPWR004A00				3/4″ [19] NPT	1 1/4″ [31.7]	

ROOF CURB ACCESSORY	A	UNIT SIZE
CRRFCURB001A00	1′-2″ [356]	50TFQ004-007
CRRFCURB002A00	2′-0″ [610]	

NOTES:
1. Roof curb accessory is shipped disassembled.
2. Insulated panels.
3. Dimensions in [ ] are in millimeters.
4. Roof curb: galvanized steel.
5. Attach ductwork to curb (flanges of duct rest on curb).
6. Service clearance: 4 ft on each side.
7. Direction of airflow.
8. Connector packages CRBTMPWR001A00 and 002A00 are for thru-the-curb type gas. Packages CRBTMPWR003A00 and 004A00 are for thru-the-bottom type gas connections.

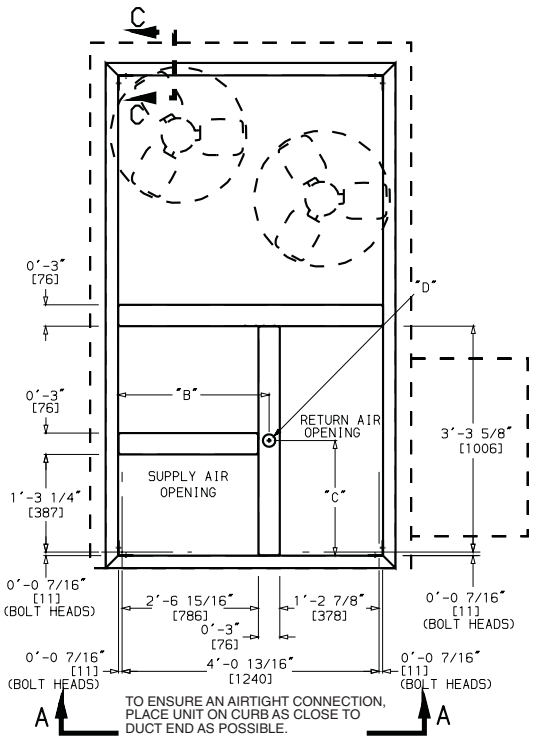


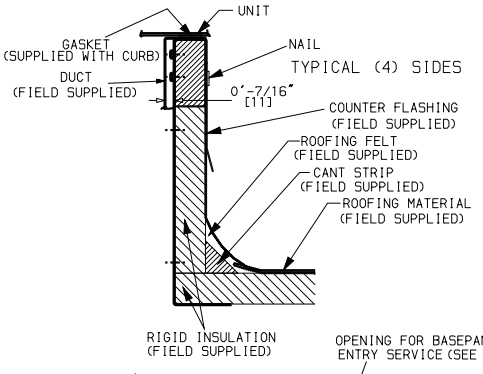
Accessory dimensions — 50TFQ008-012

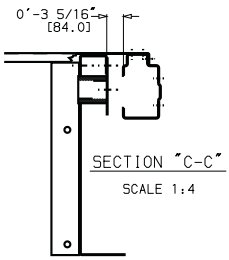
CONNECTOR PKG. ACCY.	B	C	D ALT DRAIN HOLE	GAS	POWER	CONTROL
CRBTMPWR001A00	2′-8 7/16″ [827]	1′-10 15/16″ [583]	1 3/4″ [44.5]	3/4″ [19] NPT	3/4″ [19] NPT	1/2″ [12.7] NPT
CRBTMPWR002A00					1 1/4″ [31.7]	
CRBTMPWR003A00				1/2″ [12.7] NPT	3/4″ [19] NPT	1/2″ [12.7] NPT
CRBTMPWR004A00				3/4″ [19] NPT	1 1/4″ [31.7]	

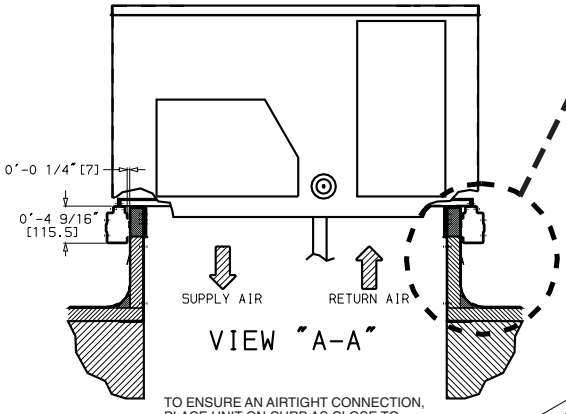
ROOF CURB ACCESSORY	"A"	UNIT SIZE 50TFQ
CRRFCURB003A00	1′-2″ [356]	008-012
CRRFCURB004A00	2′-0″ [610]	

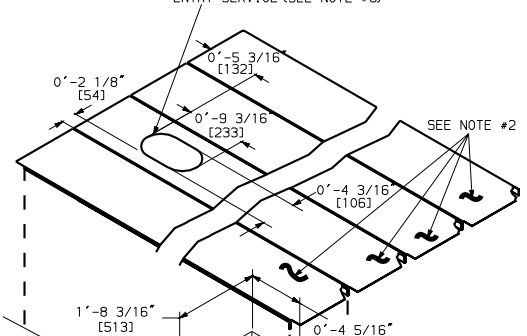
NOTES:
1. Roof curb accessory is shipped disassembled.
2. Insulated panels: 1-in. thick polyurethane foam, 1 3/4 lb density.
3. Dimensions in [ ] are in millimeters.
4. Roof curb: 16-gage steel.
5. Attach ductwork to curb (flanges of duct rest on curb).
6. Service clearance 4 ft on each side.
7. Direction of airflow.
8. Connector packages CRBTMPWR001A00 and 2A00 are for thru-the-curb gas type. Packages CRBTMPWR003A00 and 4A00 are for thru-the-bottom type gas connections.

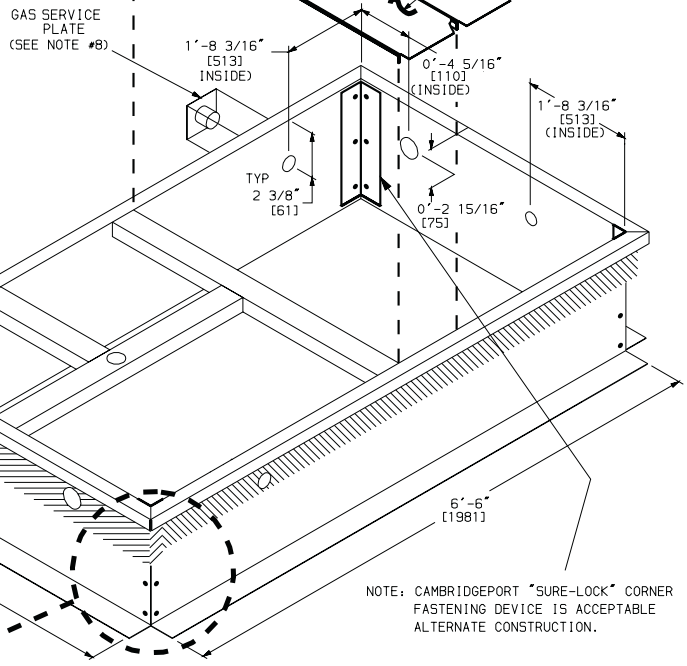


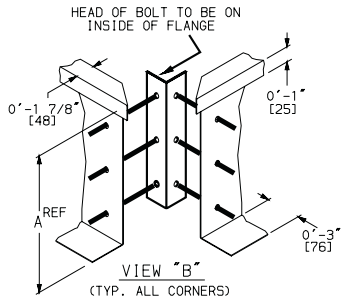









GAS SERVICE PLATE (SEE NOTE #8)
1′-8 3/16″ [513] INSIDE)
0′-4 5/16″ [110] (INSIDE)
1′-8 3/16″ [513] (INSIDE)
TYP 2 3/8″ [61]
0′-2 15/16″ [75]
"A"
6′-6″ [1981]
4′-1 3/4″ [1264]
SEE VIEW "B"
NOTE: CAMBRIDGEPORT "SURE-LOCK" CORNER FASTENING DEVICE IS ACCEPTABLE ALTERNATE CONSTRUCTION.



Selection procedure (with 50TFQ005 example)

I Determine cooling and heating loads at design conditions.

Given:

Required Cooling Capacity (TC) . . . . .38,000 Btuh
Sensible Heat Capacity (SHC) . . . . . .24,000 Btuh
Required Heating Capacity . . . . . .35,000 Btuh
Outdoor Entering-Air Temperature db. . . . . .95 F
Outdoor-Air Winter Design Temperature. . . . . 0° F
Indoor-Air Winter Design Temperature . . . . . .70 F
Indoor-Air
Temperature . . . 80 F edb (entering air, dry bulb)
67 F ewb (entering air, wet bulb)
Indoor-Air Quantity . . . . . 1600 cfm
External Static Pressure . . . . . .0.45 in. wg
Electrical Characteristics (V-Ph-Hz) 230-3-60

II Select unit based on required cooling capacity.

Enter Cooling Capacities table at outdoor entering temperature of 95 F, indoor air entering at 1600 cfm and 67 F ewb. The 50TFQ005 unit will provide a total cooling capacity of 49,900 Btuh and a sensible heat capacity of 33,900 Btuh.

For indoor-air temperature other than 80 F edb, calculate sensible heat capacity correction, as required, using the formula found in Note 3 following the cooling capacities tables.

NOTE: Unit ratings are gross capacities and do not include the effect of indoor-fan motor heat. To calculate net capacities, see Step V.

III Select electric heat.

Enter the Instantaneous and Integrated Heating Ratings table at 1600 cfm. At 70 F return indoor air and 0° F air entering outdoor coil, the integrated heating capacity is 18,000 Btuh. (Select integrated heating capacity value since deductions for outdoor-coil frost and defrosting have already been made. No correction is required.)

The required heating capacity is 35,000 Btuh. Therefore, 17,000 Btuh (35,000 – 18,000) additional electric heat is required.

Determine additional electric heat capacity in kW.

$$\frac{17{,}000 \text{ Btuh}}{3413 \text{ Btuh/kW}} = 5.0 \text{ kW of heat required.}$$

Enter the Electric Heating Capacities table (page 68) for 50TFQ005 at 208/230, 3 phase. The 6.5-kW heater at 240 v most closely satisfies the heating required. To calculate kW at 230 v, use the Multiplication Factors table.

6.5 kW x .92 = 5.98 kW
6.5 kW x .92 x 3413 = 20,410 Btuh

Total unit heating capacity is 38,410 Btuh (18,000 + 20,410).

IV Determine fan speed and power requirements at design conditions.

Before entering Fan Performance tables, calculate the total static pressure required based on unit components. From the given and the Pressure Drop tables, find:

External static pressure	.45 in. wg
Durablade economizer	.05 in. wg
Electric heat	.09 in. wg
Total static pressure	.59 in. wg

Enter the Fan Performance table for 50TFQ005 vertical discharge. At 1600 cfm and 230-v high speed, the standard motor will deliver 0.76 in. wg static pressure, 723 watts, and 0.64 brake horsepower (bhp). This will adequately handle job requirements.

V Determine net capacities.

Capacities are gross and do not include the effect of indoor-fan motor (IFM) heat.

Determine net cooling capacity as follows:

Net capacity = Total capacity – IFM heat
= 49,900 Btuh – (723 Watts x 3.413 Btuh/Watts)
= 49,900 Btuh – 2468 Btuh
= 47,432

Net sensible capacity = 33,900 Btuh – 2468 Btuh
= 31,432 Btuh

Integrated heating capacity is maximum (instantaneous) capacity less the effect of frost on the outdoor coil and the heat required to defrost it. Therefore, net capacity is equal to 38,410 Btuh, the total heating capacity determined in Step III.

Performance data

COOLING CAPACITIES

50TFQ004 (3 TONS)

Temp (F) Outdoor Entering Air (Edb)		Indoor Entering Air — Cfm/BF								
		900/0.10			1200/0.15			1500/0.21		
		Indoor Entering Air — Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	42.4	39.9	36.5	43.0	41.2	38.7	45.1	42.8	40.3
	SHC	16.7	22.0	26.8	17.5	24.2	30.9	19.3	26.9	34.1
	kW	2.77	2.71	2.62	2.78	2.74	2.68	2.85	2.79	2.73
85	TC	41.5	38.4	34.8	43.3	40.4	37.0	44.0	41.7	38.7
	SHC	16.6	21.6	26.2	18.2	24.6	30.3	19.3	27.2	33.7
	kW	3.01	2.92	2.80	3.07	2.98	2.88	3.09	3.03	2.94
95	TC	40.0	36.3	33.0	42.3	38.5	35.2	43.4	40.0	36.7
	SHC	16.2	20.9	25.7	18.2	24.2	29.8	19.7	27.2	32.7
	kW	3.24	3.10	2.99	3.32	3.19	3.07	3.36	3.24	3.13
105	TC	38.4	34.7	31.0	40.0	36.7	33.1	41.2	37.7	35.2
	SHC	15.7	20.5	24.8	17.5	23.9	28.8	19.3	26.6	31.7
	kW	3.47	3.32	3.16	3.53	3.41	3.26	3.58	3.44	3.35
115	TC	36.1	32.5	28.9	38.1	34.3	31.1	39.3	35.5	33.2
	SHC	15.1	19.8	23.9	17.2	23.2	27.8	19.1	26.2	30.2
	kW	3.66	3.50	3.32	3.76	3.59	3.44	3.81	3.65	3.54
125	TC	34.2	30.5	26.8	35.9	32.0	29.3	36.8	33.0	31.3
	SHC	14.6	19.2	22.9	16.7	22.6	26.3	18.5	25.5	28.4
	kW	3.88	3.68	3.49	3.97	3.77	3.62	4.02	3.83	3.74

50TFQ005 (4 TONS)

Temp (F) Outdoor Entering Air (Edb)		Indoor Entering Air — Cfm/BF								
		1200/0.11			1600/0.15			2000/0.22		
		Indoor Entering Air — Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	55.5	51.9	47.4	56.9	54.6	50.3	59.3	56.5	52.1
	SHC	24.5	31.2	37.4	26.0	35.2	43.4	28.4	39.0	47.6
	kW	3.80	3.70	3.55	3.84	3.79	3.66	3.93	3.86	3.71
85	TC	53.4	49.7	45.3	56.3	52.6	47.8	57.5	54.1	49.8
	SHC	23.8	30.4	36.7	26.3	34.9	42.6	28.3	38.6	46.9
	kW	4.10	3.99	3.84	4.23	4.11	3.94	4.27	4.16	4.01
95	TC	52.0	47.4	43.0	53.7	49.9	45.5	54.5	51.6	47.4
	SHC	23.4	29.6	35.8	25.5	33.9	41.6	27.3	38.2	45.2
	kW	4.47	4.28	4.11	4.53	4.39	4.23	4.56	4.48	4.29
105	TC	49.3	45.0	40.6	51.8	47.2	43.0	52.6	48.7	45.4
	SHC	22.5	28.8	34.7	25.3	33.0	40.3	27.1	37.1	43.3
	kW	4.77	4.59	4.39	4.90	4.68	4.52	4.92	4.76	4.63
115	TC	46.6	42.4	38.0	48.8	44.6	40.6	50.2	45.8	43.2
	SHC	21.7	27.9	33.6	24.3	32.4	38.7	26.8	36.1	41.2
	kW	5.08	4.90	4.66	5.21	5.01	4.81	5.29	5.06	4.96
125	TC	44.0	39.6	35.4	45.6	41.6	38.3	47.0	42.9	40.9
	SHC	20.9	26.9	32.4	23.3	31.6	36.5	25.9	35.6	39.0
	kW	5.45	5.21	4.96	5.51	5.34	5.14	5.60	5.41	5.30

50TFQ006 (5 TONS)

Temp (F) Outdoor Entering Air (Edb)		Indoor Entering Air — Cfm/BF								
		1500/0.05			2000/0.08			2500/0.14		
		Indoor Entering Air — Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	69.3	64.5	59.3	70.8	67.9	62.8	72.9	69.3	65.4
	SHC	30.9	39.2	47.4	33.1	44.9	55.4	35.8	49.4	61.4
	kW	4.28	4.15	4.03	4.32	4.25	4.12	4.38	4.29	4.19
85	TC	67.7	62.4	56.8	69.1	65.7	60.2	71.1	67.7	63.2
	SHC	30.4	38.6	46.5	32.8	44.6	54.4	35.8	50.0	59.8
	kW	4.76	4.61	4.49	4.79	4.72	4.56	4.86	4.78	4.65
95	TC	65.2	59.8	54.4	67.7	62.9	57.6	69.1	64.8	60.7
	SHC	29.6	37.6	45.5	32.8	43.6	53.2	35.6	49.3	57.7
	kW	5.27	5.10	4.97	5.35	5.20	5.07	5.39	5.27	5.14
105	TC	62.3	57.2	51.8	65.1	59.6	54.9	66.8	61.7	58.3
	SHC	28.6	33.8	44.4	32.1	42.6	51.6	35.4	48.2	55.5
	kW	5.79	5.66	5.50	5.90	5.73	5.61	5.97	5.79	5.68
115	TC	59.7	54.2	49.0	61.7	57.0	52.5	63.2	58.4	55.8
	SHC	27.6	35.8	43.2	31.1	41.9	49.6	34.3	47.0	53.2
	kW	6.37	6.24	6.06	6.47	6.34	6.20	6.53	6.36	6.31
125	TC	56.5	51.0	46.0	58.2	53.5	49.8	59.4	55.1	53.0
	SHC	26.8	34.7	41.9	30.0	40.8	47.3	33.0	46.5	50.5
	kW	7.03	6.87	6.65	7.07	6.96	6.82	7.13	7.03	6.96

LEGEND

BF — Bypass Factor
Edb — Entering Dry-Bulb
Ewb — Entering Wet-Bulb
kW — Compressor Motor Power Input
Ldb — Leaving Dry-Bulb
Lwb — Leaving Wet-Bulb
SHC — Sensible Heat Capacity (1000 Btuh) Gross
TC — Total Capacity (1000 Btuh) Gross

NOTES:

1. Direct interpolation is permissible. Do not extrapolate.
2. The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{sensible capacity (Btuh)}}{1.10 \times \text{cfm}}$$

t_{lwb} = Wet-bulb temperature corresponding to enthalpy of air leaving indoor coil (h_{lwb})

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

Where: h_{ewb} = Enthalpy of air entering evaporator coil

3. The SHC is based on 80 F edb temperature of air entering indoor coil. Below 80 F edb, subtract (corr factor x cfm) from SHC.
Above 80 F edb, add (corr factor x cfm) to SHC.

COOLING CAPACITIES (cont)

50TFQ007 (6 TONS)

Temp (F) Outdoor Entering Air (Edb)		Indoor Entering Air — Cfm/BF								
		1800/0.10			2400/0.13			3000/0.19		
		Indoor Entering Air — Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	81.1	77.6	72.1	84.0	80.3	75.2	84.2	81.1	77.8
	SHC	36.2	46.9	57.0	39.1	52.4	65.4	40.8	56.2	72.2
	kW	5.16	5.11	5.01	5.23	5.16	5.06	5.23	5.17	5.11
85	TC	80.7	75.8	70.0	83.9	79.3	73.4	84.1	80.8	76.2
	SHC	36.1	46.5	56.4	39.7	52.9	65.2	41.6	58.3	71.9
	kW	5.83	5.74	5.65	5.90	5.81	5.69	5.90	5.84	5.76
95	TC	79.3	73.0	67.3	82.0	76.7	70.8	83.0	79.1	73.5
	SHC	35.8	45.4	55.3	39.3	52.3	64.3	42.2	58.9	69.7
	kW	6.54	6.37	6.28	6.60	6.47	6.37	6.62	6.55	6.40
105	TC	76.0	70.6	64.3	79.6	73.4	67.9	80.7	75.5	71.3
	SHC	34.6	44.8	54.1	38.8	51.2	62.9	42.0	57.6	67.8
	kW	7.21	7.12	6.94	7.34	7.15	7.06	7.36	7.22	7.14
115	TC	72.7	67.5	61.1	75.8	70.6	64.7	77.9	71.8	68.5
	SHC	33.6	43.7	52.7	37.6	50.7	60.9	41.5	56.4	65.2
	kW	7.95	7.86	7.63	8.06	7.95	7.77	8.14	7.94	7.90
125	TC	70.1	63.9	57.6	71.8	66.9	61.6	73.5	68.6	65.4
	SHC	32.9	42.4	51.2	36.4	49.5	58.4	40.2	56.1	62.3
	kW	8.82	8.62	8.37	8.83	8.73	8.54	8.89	8.79	8.69

50TFQ008 (7 1/2 TONS)

Temp (F) Outdoor Entering Air (Edb)		Indoor Entering Air — Cfm/BF											
		2250/0.04			3000/0.06			3200/0.08			3750/0.11		
		Indoor Entering Air — Ewb (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
75	TC	109.8	101.4	92.2	116.2	107.0	98.0	117.6	108.8	100.2	118.8	110.4	102.4
	SHC	44.2	57.4	69.4	49.6	66.0	82.0	51.8	69.8	87.0	54.0	74.0	92.0
	kW	6.66	6.44	6.18	6.86	6.60	6.36	6.92	6.66	6.42	6.94	6.70	6.48
85	TC	105.2	96.4	87.0	111.4	102.2	92.6	113.0	104.0	95.0	114.6	105.8	97.6
	SHC	42.8	55.6	67.6	48.4	65.0	80.0	50.8	69.0	84.4	53.4	73.8	88.8
	kW	7.20	6.94	6.64	7.42	7.14	6.82	7.48	7.20	6.90	7.54	7.28	7.00
95	TC	100.6	91.0	82.0	105.6	96.2	87.4	107.2	98.0	89.8	108.6	99.6	92.8
	SHC	41.6	54.0	65.8	47.0	63.2	77.8	49.4	67.4	81.4	52.0	72.2	84.6
	kW	7.78	7.42	7.08	7.96	7.62	7.30	8.00	7.70	7.40	8.06	7.76	7.50
105	TC	94.8	85.4	76.8	99.8	90.2	82.2	101.4	91.6	85.0	103.2	93.2	88.0
	SHC	40.0	52.2	63.8	45.6	61.6	74.6	48.2	65.8	77.6	51.2	70.4	80.4
	kW	8.26	7.88	7.50	8.48	8.10	7.76	8.56	8.18	7.88	8.64	8.24	8.02
115	TC	88.8	79.9	71.4	93.4	84.0	77.6	94.8	85.4	80.0	96.0	86.6	83.0
	SHC	38.4	50.4	61.6	44.2	59.8	70.6	46.6	64.0	73.2	49.4	68.6	75.8
	kW	8.76	8.32	7.90	8.98	8.54	8.22	9.04	8.62	8.36	9.10	8.70	8.50
125	TC	82.6	73.8	65.8	86.6	77.4	74.4	88.0	78.8	75.0	89.2	80.0	77.6
	SHC	36.8	48.6	59.2	42.2	57.8	66.2	45.2	62.0	68.6	48.2	66.6	71.0
	kW	9.20	8.74	8.30	9.44	8.96	8.68	9.52	9.02	8.82	9.60	9.12	8.98

50TFQ009 (8 1/2 TONS)

Temp (F) Outdoor Entering Air (Edb)		Indoor Entering Air — Cfm/BF											
		2400/0.06			3200/0.09			3600/0.11			4000/0.14		
		Indoor Entering Air — Ewb (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
75	TC	111.4	102.3	91.0	115.7	108.2	97.6	117.0	110.1	100.4	118.1	111.6	102.5
	SHC	51.8	64.3	75.3	54.9	71.9	87.6	55.8	74.9	92.5	56.7	77.1	96.4
	kW	8.64	8.48	8.23	9.32	9.18	8.95	9.73	9.61	9.30	10.19	10.12	9.72
85	TC	108.8	97.4	86.1	113.7	104.2	92.9	115.2	106.6	94.8	116.6	108.3	98.0
	SHC	50.9	62.3	73.2	54.7	70.9	85.1	55.7	74.3	89.3	56.7	77.2	92.2
	kW	9.27	9.09	8.76	9.98	9.79	9.40	10.40	10.24	9.83	10.88	10.74	10.20
95	TC	104.5	92.7	81.2	110.4	98.8	87.7	112.0	101.3	90.8	113.2	103.1	93.8
	SHC	49.3	60.2	70.9	53.7	68.7	82.4	55.1	72.6	86.3	56.2	75.7	88.2
	kW	9.90	9.56	9.22	10.64	10.39	9.88	11.07	10.86	10.25	11.55	11.36	10.67
105	TC	98.8	87.8	75.9	105.5	93.4	83.0	107.4	95.4	86.5	108.9	97.1	89.5
	SHC	47.1	58.3	68.1	52.2	66.5	79.0	53.7	69.9	82.2	55.1	72.9	83.9
	kW	10.37	10.08	9.70	11.26	10.90	10.33	11.71	11.34	10.73	12.20	11.82	11.24
115	TC	93.8	82.4	71.1	98.7	87.9	78.6	100.8	89.8	82.1	102.9	91.3	85.3
	SHC	45.3	56.0	65.9	49.5	64.5	75.5	51.3	68.0	77.9	53.0	71.0	79.6
	kW	10.99	10.56	10.13	11.72	11.39	10.79	12.16	11.86	11.24	12.76	12.38	11.76
125	TC	88.4	77.2	66.7	93.1	82.2	74.5	94.9	83.9	77.9	96.2	85.3	80.8
	SHC	43.4	54.1	63.1	47.7	62.3	71.4	49.2	65.8	73.7	50.4	68.8	75.2
	kW	11.52	11.03	10.56	12.33	11.87	11.30	12.78	12.33	11.75	13.29	12.81	12.27

LEGEND

BF — Bypass Factor
Edb — Entering Dry-Bulb
Ewb — Entering Wet-Bulb
kW — Compressor Motor Power Input
Ldb — Leaving Dry-Bulb
Lwb — Leaving Wet-Bulb
SHC — Sensible Heat Capacity (1000 Btuh) Gross
TC — Total Capacity (1000 Btuh) Gross

NOTES:

1. Direct interpolation is permissible. Do not extrapolate.
2. The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{sensible capacity (Btuh)}}{1.10 \times \text{cfm}}$$

t_{lwb} = Wet-bulb temperature corresponding to enthalpy of air leaving indoor coil (h_{lwb})

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

Where: h_{ewb} = Enthalpy of air entering evaporator coil

3. The SHC is based on 80 F edb temperature of air entering indoor coil. Below 80 F edb, subtract (corr factor x cfm) from SHC. *Above 80 F edb, add (corr factor x cfm) to SHC.*

Performance data (cont)

COOLING CAPACITIES (cont)

50TFQ012 (10 TONS)

Temp (F) Outdoor Entering Air (Edb)		Indoor Entering Air — Cfm/BF											
		2800/0.11			3750/0.16			4100/0.18			4700/0.21		
		Indoor Entering Air — Ewb (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
75	TC	127.4	120.4	110.6	134.2	126.2	116.2	135.6	127.4	117.8	137.0	129.0	120.6
	SHC	60.0	76.4	91.0	66.2	86.0	104.4	67.8	89.0	108.8	70.2	93.4	115.6
	kW	8.30	8.18	7.88	8.54	8.34	8.04	8.60	8.36	8.10	8.64	8.38	8.20
85	TC	124.6	116.2	106.4	131.0	122.0	112.4	132.4	123.6	114.0	133.8	126.0	116.4
	SHC	59.2	74.6	89.4	65.4	84.8	103.6	67.4	88.4	107.4	70.0	94.2	112.8
	kW	9.24	9.04	8.74	9.50	9.24	8.98	9.54	9.28	9.02	9.60	9.36	9.08
95	TC	121.8	112.0	102.2	126.2	117.4	107.4	127.8	119.0	109.4	130.0	121.2	112.6
	SHC	58.4	73.2	87.4	63.8	83.4	101.0	66.0	87.2	104.8	69.6	93.4	110.2
	kW	10.34	10.04	9.66	10.46	10.18	9.90	10.52	10.26	9.96	10.62	10.36	10.08
105	TC	116.9	107.2	97.6	122.4	112.4	102.8	123.6	113.8	105.0	124.6	115.6	108.4
	SHC	56.6	71.4	85.4	63.0	82.0	98.4	65.0	85.8	101.8	67.8	91.4	106.2
	kW	11.38	11.08	10.66	11.64	11.28	10.90	11.68	11.32	11.00	11.68	11.38	11.16
115	TC	112.0	102.0	92.8	116.6	107.0	98.0	118.0	108.2	100.2	120.0	110.0	103.8
	SHC	55.0	69.6	83.2	61.2	80.2	95.2	63.6	84.2	98.0	67.4	90.2	101.8
	kW	12.58	12.18	11.74	12.78	11.42	12.00	12.84	12.48	12.12	12.96	12.56	12.30
125	TC	106.4	96.8	87.8	110.4	101.2	93.6	111.6	102.2	95.8	113.6	103.8	99.0
	SHC	53.2	67.4	80.8	59.2	78.4	91.4	61.4	82.2	94.0	65.4	88.0	97.2
	kW	13.84	13.36	12.90	13.96	13.62	13.22	14.02	13.68	13.34	14.14	13.76	13.54

LEGEND

BF — Bypass Factor
Edb — Entering Dry-Bulb
Ewb — Entering Wet-Bulb
kW — Compressor Motor Power Input
Ldb — Leaving Dry-Bulb
Lwb — Leaving Wet-Bulb
SHC — Sensible Heat Capacity (1000 Btuh) Gross
TC — Total Capacity (1000 Btuh) Gross

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{sensible capacity (Btuh)}}{1.10 \times \text{cfm}}$$

t_{lwb} = Wet-bulb temperature corresponding to enthalpy of air leaving indoor coil (h_{lwb})

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

Where: h_{ewb} = Enthalpy of air entering evaporator coil

3. The SHC is based on 80 F edb temperature of air entering indoor coil.
Below 80 F edb, subtract (corr factor x cfm) from SHC.
Above 80 F edb, add (corr factor x cfm) to SHC.

INSTANTANEOUS AND INTEGRATED HEATING RATINGS

50TFQ004

Return Air (F db)	Cfm (Standard Air)		Air Temperature Entering Outdoor Coil (F)															
			0		10		17		30		40		47		50		60	
55	900	Cap.	15.4	13.1	19.2	17.6	21.7	19.8	27.4	24.0	31.9	31.9	35.3	35.3	36.9	36.9	41.4	41.4
		kW	2.25		2.44		2.57		2.86		3.10		3.29		3.38		3.64	
	1200	Cap.	15.9	13.5	19.4	17.8	22.5	20.5	28.3	24.8	32.9	32.9	35.8	35.8	37.0	37.0	40.1	40.1
		kW	2.24		2.40		2.54		2.80		3.02		3.15		3.21		3.35	
	1500	Cap.	16.2	13.8	19.8	18.2	22.9	20.9	28.8	25.2	33.1	33.1	35.3	35.3	36.5	36.5	38.6	38.6
		kW	2.23		2.38		2.52		2.76		2.94		3.03		3.08		3.17	
70	900	Cap.	13.2	11.2	17.1	15.7	20.0	18.2	25.4	22.2	29.8	29.8	33.2	33.2	34.7	34.7	40.1	40.1
		kW	2.29		2.50		2.67		2.98		3.24		3.45		3.55		3.91	
	1200	Cap.	13.7	11.6	17.7	16.3	20.3	18.5	26.3	23.1	30.8	30.8	34.4	34.4	36.0	36.0	40.9	40.9
		kW	2.28		2.49		2.62		2.93		3.17		3.36		3.45		3.72	
	1500	Cap.	14.0	11.9	18.1	16.6	20.7	18.9	26.9	23.6	31.6	31.6	35.1	35.1	36.9	36.9	40.2	40.2
		kW	2.27		2.47		2.60		2.89		3.12		3.30		3.38		3.54	
80	900	Cap.	11.5	9.8	15.5	14.2	18.4	16.8	23.7	20.8	28.1	28.1	31.7	31.7	33.2	33.2	38.5	38.5
		kW	2.30		2.54		2.71		3.04		3.32		3.55		3.65		4.03	
	1200	Cap.	12.0	10.2	16.2	14.8	19.2	17.5	24.7	21.6	29.3	29.3	33.0	33.0	34.5	34.5	40.2	40.2
		kW	2.30		2.52		2.69		2.99		3.26		3.47		3.56		3.91	
	1500	Cap.	12.3	10.5	16.6	15.2	19.7	18.0	25.4	22.3	30.1	30.1	33.7	33.7	35.3	35.3	39.2	39.2
		kW	2.29		2.51		2.68		2.97		3.22		3.41		3.50		3.70	

LEGEND

Cap. — Heating Capacity (1000 Btuh) (includes indoor-fan motor heat)
db — dry bulb
kW — Total Power Input (includes compressor motor power input, outdoor-fan motor input, and indoor-fan motor input)

NOTES:
1. ▭ indicates integrated ratings.
2. Integrated capacity is maximum (instantaneous) capacity less the effect of frost on the outdoor coil and the heat required to defrost it.

INSTANTANEOUS AND INTEGRATED HEATING RATINGS (cont)

50TFQ005

Return Air (F db)	Cfm (Standard Air)		Air Temperature Entering Outdoor Coil (F)													
			0		10		17		30		40		47		50		60	
55	1200	Cap.	22.7	19.3	26.6	24.4	30.2	27.6	37.4	32.7	43.1	43.1	47.6	47.6	49.8	49.8	57.2	57.2
		kW	2.91		3.14		3.35		3.77		4.12		4.40		4.54		5.04	
	1600	Cap.	23.1	19.7	27.2	25.0	30.8	28.1	38.2	33.5	44.1	44.1	48.9	48.9	51.1	51.1	59.0	59.0
		kW	2.87		3.09		3.28		3.66		3.97		4.23		4.34		4.80	
	2000	Cap.	23.4	19.9	27.4	25.2	31.2	28.4	38.7	33.9	44.8	44.8	49.7	49.7	52.0	52.0	60.2	60.2
		kW	2.85		3.05		3.23		3.59		3.88		4.11		4.23		4.65	
70	1200	Cap.	20.6	17.5	25.5	23.4	28.4	25.9	35.6	31.2	41.0	41.0	45.5	45.5	47.5	47.5	54.9	54.9
		kW	3.00		3.33		3.52		4.01		4.39		4.71		4.85		5.40	
	1600	Cap.	21.2	18.0	25.6	23.5	29.1	26.6	36.3	31.8	42.1	42.1	46.8	46.8	48.9	48.9	56.5	56.5
		kW	2.99		3.25		3.47		3.90		4.25		4.54		4.67		5.15	
	2000	Cap.	21.6	18.3	25.9	23.8	29.5	26.9	36.9	32.3	42.8	42.8	47.5	47.5	49.7	49.7	57.6	57.6
		kW	2.97		3.22		3.43		3.84		4.16		4.42		4.55		5.00	
80	1200	Cap.	18.6	15.8	23.9	21.9	27.1	24.7	34.2	29.9	39.7	39.7	44.1	44.1	46.1	46.1	53.2	53.2
		kW	3.01		3.40		3.62		4.15		4.56		4.90		5.06		5.63	
	1600	Cap.	19.4	16.4	24.7	22.6	27.8	25.4	35.1	30.8	40.7	40.7	45.3	45.3	47.3	47.3	54.9	54.9
		kW	3.01		3.37		3.58		4.06		4.43		4.74		4.88		5.39	
	2000	Cap.	19.8	16.8	25.1	23.1	28.2	25.7	35.7	31.3	41.5	41.5	46.0	46.0	48.2	48.2	55.8	55.8
		kW	3.01		3.35		3.54		4.00		4.35		4.63		4.76		5.24	

50TFQ006

Return Air (F db)	Cfm (Standard Air)		Air Temperature Entering Outdoor Coil (F)													
			0		10		17		30		40		47		50		60	
55	1500	Cap.	29.7	25.2	34.5	31.7	38.4	35.0	46.0	40.3	52.4	52.4	57.2	57.2	59.6	59.6	67.9	67.9
		kW	3.96		4.14		4.30		4.62		4.90		5.14		5.25		5.67	
	2000	Cap.	29.8	25.4	34.7	31.8	38.6	35.2	46.3	40.6	52.9	52.9	57.7	57.7	60.1	60.1	68.7	68.7
		kW	3.83		3.98		4.12		4.38		4.63		4.82		4.91		5.25	
	2500	Cap.	29.8	25.4	34.8	31.9	38.7	35.3	46.6	40.8	53.1	53.1	58.0	58.0	60.4	60.4	68.4	68.4
		kW	3.76		3.89		4.01		4.26		4.47		4.63		4.72		4.99	
70	1500	Cap.	28.7	24.4	33.8	31.0	37.8	34.4	45.4	39.8	51.5	51.5	56.2	56.2	58.4	58.4	66.5	66.5
		kW	4.43		4.66		4.84		5.21		5.53		5.79		5.91		6.39	
	2000	Cap.	29.0	24.7	34.0	31.2	38.0	34.7	45.7	40.1	51.9	51.9	56.7	56.7	59.0	59.0	67.4	67.4
		kW	4.30		4.48		4.63		4.94		5.20		5.41		5.52		5.91	
	2500	Cap.	29.2	24.8	34.2	31.4	38.2	34.8	45.8	40.2	52.2	52.2	57.1	57.1	59.4	59.4	67.9	67.9
		kW	4.22		4.38		4.51		4.78		5.01		5.21		5.30		5.63	
80	1500	Cap.	28.1	23.8	33.1	30.4	37.2	33.9	44.9	39.3	51.0	51.0	55.6	55.6	57.8	57.8	65.7	65.7
		kW	4.77		5.03		5.23		5.64		5.99		6.27		6.41		6.92	
	2000	Cap.	28.4	24.2	33.5	30.7	37.6	34.2	45.3	39.7	51.4	51.4	56.1	56.1	58.3	58.3	66.5	66.5
		kW	4.63		4.84		5.01		5.34		5.63		5.86		5.97		6.39	
	2500	Cap.	28.6	24.3	33.7	30.9	37.7	34.4	45.5	39.8	51.6	51.6	56.4	56.4	58.7	58.7	67.0	67.0
		kW	4.55		4.73		4.88		5.17		5.42		5.62		5.72		6.09	

LEGEND

Cap. — Heating Capacity (1000 Btuh) (includes indoor-fan motor heat)
db — dry bulb
kW — Total Power Input (includes compressor motor power input, outdoor-fan motor input, and indoor-fan motor input)

NOTES:
1. ▭ indicates integrated ratings.
2. Integrated capacity is maximum (instantaneous) capacity less the effect of frost on the outdoor coil and the heat required to defrost it.

Performance data (cont)

INSTANTANEOUS AND INTEGRATED HEATING RATINGS (cont)

50TFQ007

Return Air (F db)	Cfm (Standard Air)		Air Temperature Entering Outdoor Coil (F)													
			0		10		17		30		40		47		50		60	
55	1800	Cap.	37.8	32.2	43.9	40.3	48.3	44.1	58.0	50.8	66.2	66.2	72.3	72.3	75.2	75.2	86.0	86.0
		kW	4.72		4.97		5.16		5.58		5.96		6.25		6.40		6.95	
	2400	Cap.	37.9	32.2	44.0	40.4	48.5	44.2	58.4	51.2	66.6	66.6	72.8	72.8	75.9	75.9	87.0	87.0
		kW	4.55		4.76		4.92		5.28		5.57		5.81		5.93		6.38	
	3000	Cap.	38.0	32.3	44.0	40.4	48.5	44.3	58.5	51.3	66.9	66.9	73.1	73.1	76.2	76.2	87.5	87.5
		kW	4.46		4.64		4.78		5.09		5.35		5.56		5.67		6.07	
70	1800	Cap.	37.3	31.7	43.6	40.0	48.1	43.9	57.5	50.4	65.2	65.2	71.1	71.1	74.0	74.0	84.6	84.6
		kW	5.32		5.61		5.84		6.33		6.75		7.10		7.27		7.91	
	2400	Cap.	37.5	31.9	43.8	40.2	48.2	43.9	57.7	50.5	65.6	65.6	71.8	71.8	74.7	74.7	85.4	85.4
		kW	5.13		5.38		5.57		5.97		6.32		6.61		6.74		7.25	
	3000	Cap.	37.6	32.0	43.9	40.3	48.3	44.0	57.8	50.7	66.0	66.0	72.1	72.1	75.0	75.0	86.0	86.0
		kW	5.03		5.25		5.41		5.76		6.08		6.32		6.44		6.89	
80	1800	Cap.	36.8	31.3	43.1	39.6	47.9	43.7	57.1	50.1	64.8	64.8	70.5	70.5	73.4	73.4	83.6	83.6
		kW	5.75		6.09		6.34		6.88		7.35		7.72		7.90		8.58	
	2400	Cap.	37.0	31.4	43.4	39.8	48.0	43.8	57.4	50.3	65.1	65.1	71.1	71.1	73.9	73.9	84.5	84.5
		kW	5.55		5.83		6.04		6.49		6.87		7.18		7.33		7.89	
	3000	Cap.	37.1	31.5	43.5	39.9	48.1	43.9	57.5	50.4	65.3	65.3	71.5	71.5	74.4	74.4	85.0	85.0
		kW	5.44		5.68		5.87		6.26		6.60		6.88		7.01		7.49	

50TFQ008

Return Air (F db)	Cfm (Standard Air)		Air Temperature Entering Outdoor Coil (F)													
			0		10		17		30		40		47		50		60	
55	2000	Cap.	36.6	31.2	44.0	40.4	49.8	45.4	61.4	53.8	70.4	70.4	77.4	77.4	80.6	80.6	91.8	91.8
		kW	5.24		5.64		5.94		6.58		7.08		7.50		7.68		8.32	
	2600	Cap.	37.6	32.0	45.2	41.4	51.2	46.6	63.0	55.2	72.4	72.4	79.6	79.6	83.0	83.0	92.4	92.4
		kW	5.18		5.56		5.82		6.40		6.84		7.20		7.36		7.78	
	3200	Cap.	38.2	32.4	45.8	42.0	51.8	47.2	63.8	55.8	73.6	73.6	81.0	81.0	83.8	83.8	91.2	91.2
		kW	5.16		5.50		5.74		6.28		6.70		7.02		7.12		7.40	
70	2000	Cap.	32.4	27.6	40.4	37.2	46.0	41.8	57.8	50.6	66.8	66.8	73.6	73.6	76.6	76.6	87.8	87.8
		kW	5.42		5.90		6.22		6.92		7.48		7.94		8.16		8.90	
	2600	Cap.	33.4	28.4	41.8	38.2	47.4	43.2	59.6	52.2	68.8	68.8	75.8	75.8	79.0	79.0	90.4	90.4
		kW	5.38		5.82		6.12		6.76		7.28		7.68		7.86		8.48	
	3200	Cap.	34.2	29.0	42.2	38.6	48.4	44.0	60.6	53.0	70.0	70.0	77.2	77.2	80.6	80.6	91.0	91.0
		kW	5.36		5.76		6.06		6.66		7.14		7.50		7.68		8.16	
80	2000	Cap.	29.2	24.8	37.4	34.4	43.4	39.6	54.8	48.0	64.0	64.0	70.8	70.8	73.8	73.8	84.8	84.8
		kW	5.52		6.02		6.40		7.12		7.72		8.22		8.44		9.24	
	2600	Cap.	30.2	25.8	38.8	35.6	44.6	40.6	56.8	49.8	66.2	66.2	73.2	73.2	76.4	76.4	87.8	87.8
		kW	5.48		5.96		6.30		6.98		7.54		7.98		8.18		8.88	
	3200	Cap.	31.0	26.4	39.6	36.4	45.4	41.4	58.0	50.8	67.4	67.4	74.6	74.6	78.0	78.0	89.0	89.0
		kW	5.46		5.92		6.24		6.90		7.42		7.82		8.00		8.58	

LEGEND

Cap. — Heating Capacity (1000 Btuh) (includes indoor-fan motor heat)
db — dry bulb
kW — Total Power Input (includes compressor motor power input, outdoor-fan motor input, and indoor-fan motor input)

NOTES:
1. ▭ indicates integrated ratings.
2. Integrated capacity is maximum (instantaneous) capacity less the effect of frost on the outdoor coil and the heat required to defrost it.

INSTANTANEOUS AND INTEGRATED HEATING RATINGS (cont)

50TFQ009

Return Air (F db)	Cfm (Standard Air)		Air Temperature Entering Outdoor Coil (F)													
			0		10		17		30		40		47		50		60	
55	2400	Cap.	37.0	34.1	47.1	43.3	54.8	50.0	70.3	61.6	83.2	83.2	92.0	92.0	95.5	95.5	107.9	107.9
		kW	5.30		5.81		6.18		6.92		7.56		8.11		8.27		8.92	
	3200	Cap.	40.7	37.4	51.31	47.1	59.28	54.0	75.51	66.2	88.59	88.6	96.82	96.8	100.58	100.6	112.54	112.5
		kW	5.88		6.36		6.69		7.35		7.96		8.30		8.44		8.93	
	3600	Cap.	42.6	39.2	53.4	49.1	61.5	56.1	78.1	68.4	90.9	90.9	98.9	98.9	102.6	102.6	114.5	114.5
		kW	6.29		6.75		7.07		7.70		8.29		8.56		8.70		9.14	
	4000	Cap.	44.8	41.2	55.7	51.1	63.9	58.2	80.7	70.7	93.1	93.1	98.8	98.8	104.6	104.6	116.5	116.5
		kW	6.78		7.23		7.53		8.15		8.70		8.88		9.05		9.46	
70	2400	Cap.	30.0	27.6	39.8	36.5	47.4	43.2	62.8	55.0	75.4	75.4	85.0	85.0	89.0	89.0	101.6	101.6
		kW	5.38		5.97		6.41		7.25		7.95		8.55		8.85		9.61	
	3200	Cap.	33.3	30.6	43.8	40.2	51.8	47.2	68.0	59.6	81.5	81.5	91.0	91.0	94.6	94.6	107.5	107.5
		kW	5.96		6.53		6.93		7.70		8.34		8.91		9.08		9.68	
	3600	Cap.	35.1	32.3	45.8	42.1	53.9	49.2	70.4	61.7	84.1	84.1	92.4	92.4	97.1	97.1	109.8	109.8
		kW	6.37		6.92		7.31		8.06		8.68		9.21		9.35		9.90	
	4000	Cap.	37.1	34.2	48.0	44.1	56.2	51.3	72.9	63.9	86.7	86.7	95.8	95.8	99.5	99.5	112.0	112.0
		kW	6.85		7.39		7.77		8.50		9.10		9.57		9.71		10.21	
80	2400	Cap.	25.7	23.7	35.0	32.1	42.4	38.6	57.6	50.5	70.1	70.1	79.7	79.7	83.9	83.9	96.8	96.8
		kW	5.52		6.07		6.52		7.45		8.21		8.82		9.12		10.05	
	3200	Cap.	28.6	26.3	38.5	35.3	46.5	42.4	62.6	54.9	75.9	75.9	86.0	86.0	90.2	90.2	103.2	103.2
		kW	6.05		6.62		7.06		7.91		8.59		9.18		9.48		10.14	
	3600	Cap.	30.2	27.8	40.5	37.1	48.6	44.3	65.0	57.0	78.6	78.6	88.7	88.7	92.8	92.8	105.8	105.8
		kW	6.43		7.00		7.44		8.27		8.92		9.50		9.78		10.37	
	4000	Cap.	32.2	29.6	42.6	39.1	50.9	46.4	67.5	59.2	81.2	81.2	91.3	91.3	95.2	95.2	108.3	108.3
		kW	6.90		7.47		7.90		8.71		9.34		9.91		10.13		10.70	

50TFQ012

Return Air (F db)	Cfm (Standard Air)		Air Temperature Entering Outdoor Coil (F)													
			0		10		17		30		40		47		50		60	
55	2650	Cap.	52.2	44.4	62.2	57.0	69.6	63.4	84.2	73.8	96.0	96.0	104.6	104.6	108.8	108.8	123.6	123.6
		kW	7.20		7.58		7.86		8.46		9.00		9.42		9.62		10.38	
	3500	Cap.	52.7	44.8	62.8	57.6	70.2	64.0	85.0	74.4	96.8	96.8	105.8	105.8	109.8	109.8	125.4	125.4
		kW	6.98		7.30		7.52		8.02		8.46		8.80		8.96		9.62	
	4100	Cap.	53.2	45.2	63.0	58.0	70.4	64.2	85.2	74.8	97.2	97.2	105.8	105.8	110.2	110.2	126.0	126.0
		kW	6.88		7.16		7.38		7.82		8.22		8.54		8.68		9.28	
	4400	Cap.	53.2	45.2	63.2	58.0	70.6	64.4	85.4	74.8	97.4	97.4	106.0	106.0	110.4	110.4	126.4	126.4
		kW	6.84		7.12		7.32		7.74		8.14		8.44		8.58		9.14	
70	2650	Cap.	49.8	42.2	59.2	54.4	67.0	61.2	82.0	72.0	94.0	94.0	102.6	102.6	106.8	106.8	121.2	121.2
		kW	8.08		8.50		8.86		9.56		10.14		10.62		10.86		11.72	
	3500	Cap.	50.6	43.0	60.2	55.2	63.2	62.2	83.2	72.8	95.2	95.2	103.8	103.8	108.0	108.0	122.8	122.8
		kW	7.86		8.20		8.50		9.04		9.52		9.92		10.10		10.80	
	4100	Cap.	51.0	43.2	60.6	55.6	68.6	62.6	83.6	73.2	95.6	95.6	104.2	104.2	108.4	108.4	123.4	123.4
		kW	7.74		8.06		8.32		8.82		9.26		9.62		9.78		10.40	
	4400	Cap.	51.0	43.4	60.8	55.8	68.8	62.6	83.8	73.4	95.8	95.8	104.4	104.4	108.6	108.6	123.8	123.8
		kW	7.70		8.02		8.26		8.74		9.16		9.50		9.66		10.26	
80	2650	Cap.	47.6	40.6	57.6	52.8	64.6	58.8	80.2	70.4	92.0	92.0	101.0	101.0	105.2	105.2	119.8	119.8
		kW	8.72		9.20		9.56		10.36		11.00		11.52		11.76		12.70	
	3500	Cap.	48.6	41.4	58.6	53.8	66.0	60.2	81.6	71.4	93.6	93.6	102.4	102.4	106.6	106.6	121.2	121.2
		kW	8.48		8.88		9.18		9.82		10.34		10.74		10.96		11.70	
	4100	Cap.	49.0	41.8	58.6	53.8	66.6	60.8	82.0	71.8	94.2	94.2	103.0	103.0	107.2	107.2	121.8	121.8
		kW	8.36		8.72		9.02		9.58		10.04		10.42		10.60		11.28	
	4400	Cap.	49.2	41.8	58.8	54.0	66.8	61.0	82.2	72.2	94.4	94.4	103.2	103.2	107.4	107.4	122.2	122.2
		kW	8.32		8.66		8.94		9.48		9.92		10.28		10.46		11.10	

LEGEND

Cap. — Heating Capacity (1000 Btuh) (includes indoor-fan motor heat)
db — dry bulb
kW — Total Power Input (includes compressor motor power input, outdoor-fan motor input, and indoor-fan motor input)

NOTES:
1. ▭ indicates integrated ratings.
2. Integrated capacity is maximum (instantaneous) capacity less the effect of frost on the outdoor coil and the heat required to defrost it.

Performance data (cont)

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS

50TFQ004 (3 TONS) — STANDARD MOTOR (DIRECT DRIVE)

Airflow (Cfm)	Low Speed						High Speed					
	208 v			230, 460, 575 v			208 v			230, 460, 575 v		
	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts
900	0.67	0.21	253	0.68	0.23	277	0.69	0.26	307	0.69	0.31	363
1000	0.60	0.23	270	0.61	0.25	292	0.61	0.27	321	0.63	0.32	374
1100	0.55	0.24	287	0.56	0.26	307	0.57	0.28	335	0.58	0.33	385
1200	0.51	0.26	304	0.51	0.27	323	0.52	0.29	349	0.53	0.34	397
1300	0.45	0.27	321	0.46	0.29	338	0.46	0.31	364	0.47	0.34	408
1400	0.38	0.29	338	0.41	0.30	354	0.43	0.32	378	—	—	—
1500	0.34	0.30	355	0.36	0.31	369	0.38	0.33	392	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
ESP — External Static Pressure (in. wg)
Watts — Input Watts to Motor

Refer to page 65 for general Fan Performance notes.

50TFQ004 (3 TONS) — ALTERNATE MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.1			0.2			0.3			0.4			0.5			0.6		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	**581**	**0.12**	**119**	**673**	**0.18**	**179**	**736**	**0.22**	**219**	805	0.25	249	865	0.29	288	911	0.34	338
1000	**644**	**0.19**	**189**	**709**	**0.22**	**219**	782	0.28	279	835	0.30	298	900	0.35	348	937	0.38	378
1100	**687**	**0.22**	**219**	**746**	**0.26**	**259**	806	0.30	298	867	0.35	348	929	0.40	398	964	0.40	398
1200	**733**	**0.26**	**259**	785	0.32	318	843	0.35	348	903	0.41	408	960	0.47	467	994	0.50	497
1300	**754**	**0.29**	**288**	826	0.38	378	891	0.43	428	942	0.48	477	991	0.53	527	**1047**	**0.60**	**597**
1400	810	0.35	348	868	0.45	448	937	0.51	507	984	0.57	567	**1032**	**0.62**	**617**	**1067**	**0.67**	**666**
1500	841	0.42	418	911	0.53	527	985	0.61	607	**1029**	**0.66**	**656**	**1073**	**0.72**	**716**	**1109**	**0.77**	**766**

50TFQ004 (3 TONS) — ALTERNATE MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.7			0.8			0.9			1.0			1.1			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	957	0.39	388	988	0.43	428	**1039**	**0.45**	**448**	**1061**	**0.47**	**487**	**1083**	**0.53**	**527**	**1105**	**0.57**	**567**
1000	992	0.44	438	**1039**	**0.49**	**487**	**1061**	**0.51**	**507**	**1086**	**0.55**	**547**	**1111**	**0.59**	**587**	**1136**	**0.63**	**627**
1100	**1013**	**0.49**	**487**	**1068**	**0.55**	**547**	**1090**	**0.58**	**577**	**1109**	**0.61**	**607**	**1127**	**0.64**	**637**	**1145**	**0.67**	**666**
1200	**1045**	**0.56**	**557**	**1090**	**0.64**	**637**	**1109**	**0.64**	**647**	**1156**	**0.68**	**676**	**1203**	**0.71**	**706**	**1250**	**0.74**	**736**
1300	**1075**	**0.64**	**637**	**1122**	**0.70**	**696**	**1152**	**0.72**	**716**	**1190**	**0.76**	**756**	**1228**	**0.80**	**796**	**1266**	**0.84**	**836**
1400	**1110**	**0.73**	**726**	**1160**	**0.84**	**766**	**1181**	**0.81**	**806**	**1237**	**0.85**	**845**	**1293**	**0.89**	**885**	**1349**	**0.93**	**925**
1500	**1150**	**0.82**	**816**	**1190**	**1.00**	**855**	**1225**	**0.90**	**895**	**1271**	**0.95**	**945**	**1317**	**1.00**	**995**	1363	1.05	1044

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Motor drive range: 760 to 1000 rpm. All other rpms require field-supplied drive.

Refer to page 65 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. Shaded cells indicate field-supplied motor and drive are required.
3. Maximum usable watts input is 1000 and maximum continuous bhp is 1.00.

50TFQ004 (3 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	**673**	**0.18**	**179**	**805**	**0.25**	**249**	**911**	**0.34**	**338**	**988**	**0.43**	**428**	**1061**	**0.47**	**487**
1000	**709**	**0.22**	**219**	**835**	**0.30**	**298**	**937**	**0.38**	**378**	**1039**	**0.49**	**487**	1086	0.55	547
1100	**746**	**0.26**	**259**	**867**	**0.35**	**348**	**964**	**0.40**	**398**	**1068**	**0.55**	**547**	1109	0.61	607
1200	**785**	**0.32**	**318**	**903**	**0.41**	**408**	**994**	**0.50**	**497**	1090	0.64	637	1156	0.68	676
1300	**826**	**0.38**	**378**	**942**	**0.48**	**477**	**1047**	**0.60**	**597**	1122	0.70	696	1190	0.76	756
1400	**868**	**0.45**	**448**	**984**	**0.57**	**567**	**1067**	**0.67**	**666**	1160	0.84	766	1237	0.85	845
1500	**911**	**0.53**	**527**	**1029**	**0.66**	**656**	1109	0.77	766	1190	1.00	855	1271	0.95	945

50TFQ004 (3 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	1105	0.57	567	1140	0.63	622	1170	0.68	674	1198	0.73	723	1224	0.77	771
1000	1136	0.63	627	1172	0.69	688	1203	0.75	745	1232	0.80	799	1258	0.86	852
1100	1145	0.67	666	1181	0.73	731	1213	0.80	792	1242	0.85	850	1268	0.91	906
1200	1210	0.74	736	1248	0.81	808	1282	0.88	875	1312	0.94	939	1340	1.01	1000
1300	1266	0.84	836	1306	0.92	917	1341	1.00	993	1373	1.07	1066	1402	1.14	1136
1400	1349	0.93	925	1391	1.02	1015	1429	1.11	1100	**1463**	**1.19**	**1180**	**1494**	**1.26**	**1257**
1500	1383	1.05	1044	1426	1.15	1146	**1465**	**1.25**	**1242**	**1500**	**1.34**	**1332**	**1532**	**1.43**	**1419**

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Motor drive range: 1075 to 1455 rpm. All other rpms require field-supplied drive.

Refer to page 65 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. Maximum continuous bhp is 2.4, and the maximum continuous watts are 2120.

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

50TFQ005 (4 TONS) — STANDARD MOTOR (DIRECT DRIVE)

Airflow (Cfm)	Low Speed						High Speed					
	208 v			230, 460, 575 v			208 v			230, 460, 575 v		
	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts
1200	0.93	0.41	458	0.94	0.45	506	0.94	0.51	572	0.99	0.56	632
1300	0.86	0.42	471	0.87	0.46	521	0.87	0.52	589	0.92	0.58	651
1400	0.78	0.45	503	0.79	0.49	556	0.79	0.54	616	0.87	0.60	681
1500	0.70	0.47	536	0.73	0.52	593	0.73	0.56	631	0.80	0.62	698
1600	0.61	0.49	557	0.64	0.54	616	0.66	0.58	654	0.76	0.64	723
1700	0.51	0.52	584	0.54	0.57	646	0.58	0.60	678	0.68	0.66	750
1800	0.40	0.54	610	0.44	0.60	674	0.51	0.62	698	0.63	0.68	772
1900	0.29	0.56	629	0.37	0.62	696	0.46	0.64	720	0.56	0.70	796
2000	0.25	0.58	651	0.30	0.64	720	0.39	0.66	744	0.50	0.73	823

LEGEND

Bhp — Brake Horsepower Input to Fan
ESP — External Static Pressure (in. wg)
Watts — Input Watts to Motor

Refer to page 65 for general Fan Performance notes.

50TFQ005 (4 TONS) — ALTERNATE MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)																				
	0.1			0.2			0.3			0.4			0.6			0.7			0.8		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	**542**	**0.16**	**168**	**616**	**0.21**	**221**	**678**	**0.27**	**278**	**739**	**0.32**	**336**	842	0.44	462	886	0.50	525	929	0.56	588
1300	**576**	**0.20**	**210**	**644**	**0.25**	**263**	**704**	**0.31**	**326**	**764**	**0.37**	**389**	867	0.50	525	910	0.56	588	952	0.62	651
1400	**610**	**0.24**	**252**	**673**	**0.30**	**315**	**732**	**0.36**	**378**	**791**	**0.42**	**441**	889	0.55	578	933	0.62	651	976	0.69	725
1500	**646**	**0.28**	**294**	**704**	**0.35**	**368**	**761**	**0.42**	**436**	**818**	**0.48**	**504**	912	0.61	641	957	0.69	720	1001	0.76	777
1600	**681**	**0.33**	**347**	**735**	**0.40**	**420**	**790**	**0.47**	**494**	845	0.54	567	920	0.68	695	931	0.76	772	1023	0.83	848
1700	**718**	**0.39**	**410**	**768**	**0.46**	**483**	836	0.54	562	873	0.61	641	965	0.76	777	1005	0.84	853	1045	0.91	930
1800	**754**	**0.45**	**473**	**801**	**0.53**	**557**	851	0.61	641	900	0.69	725	992	0.84	858	1032	0.92	940	1071	1.00	1022
1900	**791**	**0.52**	**546**	836	0.60	630	832	0.69	720	828	0.77	809	1019	0.93	950	1058	1.02	1037	1097	1.10	1124
2000	**828**	**0.60**	**630**	870	0.68	714	864	0.77	809	858	0.86	904	1046	1.03	1053	1085	1.12	1139	1124	1.21	1237

50TFQ005 (4 TONS) — ALTERNATE MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)																	
	1.0			1.1			1.2			1.4			1.6			1.8		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	1008	0.67	704	1052	0.73	762	1096	0.78	820	1134	0.89	835	**1203**	**1.00**	**885**	—	—	—
1300	1029	0.75	788	1065	0.81	846	1101	0.86	904	1174	1.01	1040	1229	1.15	1100	1277	1.27	1029
1400	1052	0.83	826	1087	0.90	890	1121	0.96	918	1183	1.09	1042	1255	1.22	1167	1305	1.38	1190
1500	1076	0.91	905	1111	0.99	980	1145	1.06	1014	1208	1.20	1138	1274	1.33	1272	1337	1.47	1350
1600	1100	1.00	995	1134	1.08	1069	1168	1.15	1100	1232	1.31	1253	1291	1.46	1396	1350	1.60	1558
1700	1124	1.09	1084	1158	1.17	1164	1192	1.25	1196	1255	1.42	1358	1314	1.58	1511	1370	1.77	1738
1800	1147	1.18	1174	1182	1.27	1263	1217	1.36	1301	1279	1.54	1473	1381	1.71	1635	1393	1.89	1907
1900	1169	1.27	1263	1205	1.37	1363	1240	1.47	1406	1303	1.66	1588	1408	1.85	1769	1417	2.03	2068
2000	1194	1.38	1373	1228	1.48	1472	1262	1.58	1511	1327	1.78	1702	1436	1.98	1894	1440	2.18	2229

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Motor drive range: 835 to 1185 rpm. All other rpms require field-supplied drive.

Refer to page 65 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates field-supplied motor drive is required.
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum usable watts input is 1000 and maximum continuous bhp is 1.00.

50TFQ005 (4 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	**665**	**0.25**	**263**	**779**	**0.36**	**378**	**872**	**0.48**	**504**	**957**	**0.60**	**630**	**1028**	**0.69**	**725**
1300	**699**	**0.30**	**315**	**809**	**0.42**	**441**	**902**	**0.55**	**578**	**984**	**0.67**	**704**	**1058**	**0.80**	**841**
1400	**735**	**0.36**	**378**	**840**	**0.48**	**504**	**933**	**0.62**	**651**	**1011**	**0.75**	**788**	1086	0.89	885
1500	**770**	**0.42**	**441**	**873**	**0.55**	**578**	**963**	**0.69**	**725**	**1041**	**0.84**	**858**	1113	0.99	985
1600	**835**	**0.49**	**515**	**907**	**0.63**	**662**	**993**	**0.77**	**787**	**1072**	**0.93**	**950**	1141	1.09	1084
1700	**873**	**0.57**	**599**	**941**	**0.72**	**757**	**1024**	**0.87**	**889**	1103	1.04	1063	1171	1.20	1194
1800	**881**	**0.66**	**693**	**976**	**0.81**	**851**	**1057**	**0.97**	**991**	1132	1.14	1165	1202	1.32	1313
1900	**919**	**0.75**	**788**	**1011**	**0.92**	**967**	1091	1.08	1104	1162	1.25	1277	1232	1.45	1442
2000	**958**	**0.86**	**904**	**1046**	**1.03**	**1082**	1125	1.21	1237	1195	1.38	1410	1262	1.58	1572

50TFQ005 (4 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	1083	0.74	778	1134	0.80	935	1185	0.88	965	1331	0.99	1000	1374	1.09	1083
1300	1121	0.89	935	1171	0.94	988	1219	1.00	999	1268	1.10	1029	1309	1.21	1203
1400	1153	1.00	976	1210	1.12	1071	1257	1.17	1105	1307	1.25	1190	1349	1.37	1367
1500	1180	1.13	1081	1241	1.27	1215	1295	1.37	1294	1339	1.43	1350	1382	1.57	1564
1600	1207	1.25	1196	1269	1.40	1339	1326	1.54	1454	1376	1.65	1558	1420	1.81	1805
1700	1235	1.37	1310	1296	1.53	1463	1354	1.70	1605	1407	1.84	1738	1452	2.02	2013
1800	1263	1.49	1425	1323	1.57	1597	1381	1.85	1757	1436	2.02	1907	**1482**	**2.22**	**2210**
1900	1294	1.63	1559	1351	1.81	1731	1408	2.00	1889	**1463**	**2.19**	**2068**	—	—	—
2000	1325	1.78	1702	1362	1.97	1884	1436	2.16	2040	**1489**	**2.36**	**2229**	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Motor drive range: 1075 to 1455 rpm. All other rpms require field-supplied drive.

Refer to page 65 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. Maximum continuous bhp is 2.4 and the maximum continuous watts are 2120.

Performance data (cont)

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

50TFQ006 (5 TONS) — STANDARD MOTOR (DIRECT DRIVE)

Airflow (Cfm)	Low Speed						Medium Speed						High Speed					
	208 v			230, 460, 575 v			208 v			230, 460, 575 v			208 v			230, 460, 575 v		
	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts
1500	0.88	0.67	750	1.20	0.71	791	1.19	0.70	782	1.36	0.76	845	1.38	0.79	875	1.44	0.85	949
1600	0.68	0.70	780	1.04	0.74	824	1.04	0.74	821	1.22	0.79	883	1.25	0.82	913	1.33	0.89	988
1700	0.51	0.73	810	0.89	0.77	857	0.89	0.77	861	1.09	0.83	921	1.13	0.85	950	1.22	0.92	1027
1800	0.35	0.75	839	0.73	0.80	891	0.74	0.81	900	0.96	0.86	959	1.00	0.89	988	1.11	0.96	1066
1900	0.26	0.78	873	0.58	0.83	924	0.59	0.84	940	0.86	0.90	997	0.88	0.92	1025	1.00	0.99	1105
2000	0.18	0.81	905	0.42	0.86	957	0.44	0.88	979	0.73	0.93	1035	0.78	0.95	1063	0.92	1.03	1144
2100	0.08	0.84	940	0.27	0.89	990	0.29	0.91	1018	0.59	0.96	1073	0.63	0.99	1101	0.81	1.06	1183
2200	—	—	—	0.19	0.92	1023	0.19	0.93	1035	0.46	1.00	1111	0.49	1.02	1138	0.69	1.10	1222
2300	—	—	—	0.11	0.95	1056	0.11	0.97	1076	0.34	1.03	1149	0.41	1.06	1176	0.59	1.13	1261
2400	—	—	—	0.03	0.98	1096	0.04	1.00	1113	0.19	1.07	1187	0.22	1.09	1213	0.43	1.17	1300
2500	—	—	—	—	—	—	—	—	—	0.09	1.10	1225	0.12	1.12	1251	0.34	1.20	1340

LEGEND

Bhp — Brake Horsepower Input to Fan
ESP — External Static Pressure (in. wg)
Watts — Input Watts to Motor

Refer to page 65 for general Fan Performance notes.

50TFQ006 (5 TONS) — ALTERNATE MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.1			0.2			0.4			0.6			0.8		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	**730**	**0.34**	**347**	**789**	**0.40**	**409**	**896**	**0.53**	**542**	990	0.67	685	1072	0.83	848
1600	**770**	**0.40**	**409**	**826**	**0.46**	**470**	931	0.61	623	1020	0.75	766	1101	0.91	930
1700	**811**	**0.47**	**480**	**865**	**0.54**	**552**	966	0.69	705	1051	0.84	858	1133	1.01	1032
1800	**852**	**0.55**	**562**	905	0.62	634	1002	0.78	797	1084	0.93	950	1163	1.10	1124
1900	**894**	**0.54**	**552**	945	0.72	736	1037	0.88	899	1119	1.04	1063	1194	1.21	1237
2000	936	0.74	756	984	0.82	838	1072	0.98	1001	1154	1.16	1185	1226	1.33	1359
2100	978	0.85	869	1024	0.93	950	1108	1.10	1124	1192	1.29	1318	1259	1.47	1502
2200	1021	0.97	991	1064	1.05	1073	1145	1.22	1247	1225	1.43	1461	1294	1.62	1656
2300	1064	1.10	1124	1104	1.18	1206	1183	1.36	1390	1260	1.57	1604	**1330**	**1.78**	**1819**
2400	1107	1.24	1267	1145	1.32	1349	1222	1.45	1482	1296	1.73	1768	**1365**	**1.94**	**1983**
2500	1150	1.39	1420	1186	1.48	1512	1262	1.68	1717	**1331**	**1.80**	**1921**	**1400**	**2.12**	**2166**

50TFQ006 (5 TONS) — ALTERNATE MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.0			1.2			1.4			1.6			1.8		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	1153	1.00	1022	1221	1.17	1196	1256	1.30	1328	1280	1.32	1349	**1320**	**1.22**	**1400**
1600	1178	1.09	1114	1252	1.27	1298	**1311**	**1.45**	**1482**	**1340**	**1.58**	**1615**	**1380**	**1.61**	**1645**
1700	1205	1.18	1206	1278	1.37	1400	**1345**	**1.57**	**1604**	**1397**	**1.76**	**1799**	**1424**	**1.89**	**1931**
1800	1235	1.29	1318	**1303**	**1.48**	**1512**	**1371**	**1.69**	**1727**	**1433**	**1.90**	**1942**	**1480**	**2.09**	**2136**
1900	1266	1.40	1431	**1330**	**1.59**	**1625**	**1396**	**1.80**	**1850**	**1460**	**2.03**	**2074**	**1517**	**2.25**	**2299**
2000	1297	1.53	1564	**1362**	**1.73**	**1768**	**1422**	**1.94**	**1983**	**1485**	**2.16**	**2207**	**1544**	**2.40**	**2453**
2100	**1327**	**1.66**	**1696**	**1393**	**1.80**	**1911**	**1452**	**2.08**	**2126**	**1510**	**2.31**	**2361**	1569	2.55	2606
2200	**1359**	**1.80**	**1850**	**1423**	**2.02**	**2064**	**1483**	**2.24**	**2289**	1538	2.46	2514	1595	2.71	2769
2300	**1392**	**1.97**	**2013**	**1454**	**2.18**	**2228**	1515	2.41	2463	1569	2.64	2698	1622	2.88	2943
2400	**1426**	**2.15**	**2197**	**1485**	**2.36**	**2412**	1544	2.59	2647	1601	2.84	2902	1652	3.07	3137
2500	**1461**	**2.34**	**2391**	1518	2.55	2606	1575	2.78	2841	1631	3.03	3096	1684	3.28	3352

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Motor drive range: 900 to 1300 rpm. All other rpms require field-supplied drive.

Refer to page 65 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum usable watts input is 2120 and maximum continuous bhp is 1.30 for single-phase units and 2.40 for 3-phase units.

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

50TFQ006 (5 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	**808**	**0.42**	**429**	**914**	**0.56**	**572**	**1001**	**0.69**	**705**	**1084**	**0.85**	**869**	**1168**	**1.01**	**1032**
1600	**846**	**0.49**	**501**	**950**	**0.64**	**645**	**1034**	**0.78**	**797**	**1111**	**0.94**	**961**	**1194**	**1.11**	**1134**
1700	**884**	**0.57**	**582**	**983**	**0.72**	**736**	**1068**	**0.88**	**899**	**1145**	**1.03**	**1053**	**1218**	**1.21**	**1237**
1800	**924**	**0.66**	**674**	**1018**	**0.82**	**838**	**1105**	**0.98**	**1001**	**1179**	**1.13**	**1155**	**1246**	**1.32**	**1349**
1900	**965**	**0.76**	**777**	**1057**	**0.92**	**940**	**1143**	**1.10**	**1124**	**1212**	**1.26**	**1288**	**1280**	**1.43**	**1461**
2000	**1008**	**0.87**	**889**	**1096**	**1.04**	**1063**	**1177**	**1.22**	**1247**	**1247**	**1.40**	**1431**	1300	1.57	1604
2100	**1051**	**0.99**	**1012**	**1136**	**1.17**	**1196**	**1210**	**1.35**	**1380**	**1284**	**1.54**	**1574**	1347	1.72	1758
2200	**1095**	**1.12**	**1145**	**1173**	**1.30**	**1328**	**1245**	**1.49**	**1523**	1322	1.70	1737	1380	1.89	1931
2300	**1140**	**1.26**	**1288**	**1210**	**1.47**	**1502**	**1284**	**1.65**	**1686**	1356	1.80	1901	1418	2.07	2115
2400	**1185**	**1.41**	**1441**	**1249**	**1.61**	**1645**	1323	1.80	1860	1389	2.03	2074	1456	2.26	2310
2500	**1231**	**1.57**	**1604**	**1289**	**1.78**	**1819**	1363	2.00	2044	1424	2.22	2269	1500	2.45	2504

50TFQ006 (5 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	**1199**	**1.19**	**1216**	**1126**	**1.46**	**1492**	**1250**	**1.69**	**1757**	1301	1.91	1944	1349	2.12	2164
1600	**1263**	**1.28**	**1308**	**1275**	**1.49**	**1523**	**1299**	**1.78**	**1800**	1352	2.01	2047	1401	2.23	2280
1700	**1295**	**1.39**	**1420**	1351	1.58	1615	1352	1.80	1850	1407	2.03	2070	1459	2.26	2305
1800	1319	1.52	1553	1389	1.71	1747	1435	1.91	1952	1494	2.15	2197	1548	2.40	2446
1900	1343	1.64	1676	1415	1.80	1891	1478	2.05	2095	1538	2.31	2358	1594	2.57	2625
2000	1374	1.77	1809	1438	1.99	2034	1505	2.21	2258	1566	2.49	2542	1624	2.77	2830
2100	1409	1.91	1952	1465	2.14	2167	1533	2.45	2501	1596	2.77	2821	1654	3.08	3141
2200	1442	2.08	2126	1498	2.30	2350	1568	2.64	2688	1632	2.97	3031	1691	3.31	3375
2300	1475	2.26	2310	1554	2.64	2698	1627	3.03	3091	1693	3.42	3486	1755	3.81	3881
2400	1565	2.47	2524	1649	2.89	2948	1726	3.31	3379	—	—	—	—	—	—
2500	1596	2.95	3010	1682	3.45	3522	1760	3.96	4036	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Motor drive range: 1300 to 1685 rpm. All other rpms require field-supplied drive.

Refer to page 65 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum continuous bhp is 2.9 and the maximum continuous watts are 2562.

50TFQ007 (6 TONS)* — STANDARD MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.1			0.2			0.4			0.6			0.8		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	**852**	**0.55**	**562**	**905**	**0.62**	**615**	**1002**	**0.78**	**739**	1084	0.93	859	1163	1.10	998
1900	**894**	**0.64**	**630**	**945**	**0.72**	**692**	**1037**	**0.88**	**818**	1119	1.04	948	1194	1.21	1089
2000	**936**	**0.74**	**708**	**984**	**0.82**	**771**	1072	0.98	899	1154	1.16	1047	1226	1.33	1190
2100	**978**	**0.85**	**795**	**1024**	**0.93**	**859**	1108	1.10	998	1190	1.29	1156	1259	1.47	1310
2200	**1021**	**0.97**	**891**	**1064**	**1.05**	**956**	1145	1.22	1097	1225	1.43	1275	1294	1.62	1439
2300	**1064**	**1.10**	**998**	1104	1.18	1064	1183	1.36	1216	1260	1.57	1396	1330	1.78	1578
2400	1107	1.24	1114	1145	1.32	1182	1222	1.52	1353	1296	1.73	1534	1365	1.94	1718
2500	1150	1.39	1241	1186	1.48	1318	1262	1.68	1491	1331	1.89	1674	1400	2.12	1875
2600	1193	1.56	1387	1228	1.65	1465	1301	1.86	1648	1367	2.07	1831	1435	2.31	2041
2700	1237	1.74	1543	1269	1.83	1621	1341	2.05	1814	1404	2.26	1997	1471	2.51	2214
2800	1280	1.94	1718	1311	2.03	1796	1381	2.25	1989	1442	2.47	2180	1506	2.72	2394
2900	1324	2.15	1901	1354	2.24	1980	1420	2.47	2180	1481	2.69	2369	1542	2.94	2579
3000	1368	2.37	2093	1396	2.46	2171	1460	2.69	2369	1521	2.93	2571	—	—	—

50TFQ007 (6 TONS)* — STANDARD MOTOR (BELT DRIVE) (cont)

Airflow (Cfm)	External Static Pressure (in. wg)											
	1.0			1.2			1.4			1.6		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	1235	1.29	1156	1303	1.48	1318	1371	1.69	1499	1433	1.90	1638
1900	1266	1.40	1250	1330	1.59	1413	1396	1.81	1604	1460	2.03	1796
2000	1297	1.53	1361	1362	1.73	1534	1422	1.94	1718	**1485**	**2.16**	**1910**
2100	1327	1.66	1473	1393	1.87	1656	1452	2.08	1840	**1510**	**2.31**	**2041**
2200	1359	1.81	1604	1423	2.02	1779	**1483**	**2.24**	**1980**	1538	2.46	2171
2300	1392	1.97	1744	1454	2.18	1927	1515	2.41	2128	1569	2.64	2326
2400	1426	2.15	1901	**1485**	**2.36**	**2084**	1544	2.59	2283	1601	2.84	2459
2500	**1461**	**2.34**	**2067**	1518	2.55	2249	1575	2.78	2445	—	—	—
2600	1497	2.54	2240	1552	2.76	2428	—	—	—	—	—	—
2700	1532	2.75	2420	—	—	—	—	—	—	—	—	—
2800	—	—	—	—	—	—	—	—	—	—	—	—
2900	—	—	—	—	—	—	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Motor drive range: 1070 to 1460 rpm. All other rpms require field-supplied drive.

Refer to page 65 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum usable watts input is 2120 and maximum continuous bhp is 2.40.

Performance data (cont)

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

50TFQ007 (6 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	**978**	**0.66**	**700**	**1063**	**0.82**	**771**	**1147**	**0.97**	**891**	**1248**	**1.20**	**1081**	1322	1.33	1190
1900	**1023**	**0.78**	**779**	**1097**	**0.91**	**843**	**1175**	**1.11**	**1006**	**1266**	**1.29**	**1158**	1356	1.47	1310
2000	**1068**	**0.90**	**867**	**1132**	**1.01**	**924**	**1218**	**1.23**	**1106**	1303	1.41	1258	1397	1.52	1353
2100	**1115**	**1.00**	**998**	**1180**	**1.17**	**1056**	**1261**	**1.35**	**1207**	1340	1.53	1361	1428	1.66	1473
2200	**1159**	**1.15**	**1081**	**1214**	**1.28**	**1148**	1310	1.52	1353	1375	1.63	1447	1459	1.80	1595
2300	**1202**	**1.29**	**1140**	**1248**	**1.38**	**1233**	1358	1.69	1499	1410	1.72	1526	1488	1.93	1709
2400	**1237**	**1.41**	**1224**	**1292**	**1.55**	**1378**	1392	1.81	1604	1460	1.90	1683	1532	2.14	1892
2500	**1272**	**1.53**	**1335**	1335	1.71	1517	1427	1.94	1718	1518	2.16	1910	1575	2.35	2076
2600	1320	1.68	1482	1368	1.81	1604	1458	2.06	1823	1562	2.42	2136	1620	2.59	2283
2700	1361	1.82	1595	1400	1.91	1691	1490	2.19	1936	1602	2.64	2326	1666	2.85	2504
2800	1402	1.95	1639	1439	2.08	1840	1543	2.43	2145	1642	2.86	2512	1775	3.62	3290
2900	1446	2.16	1814	1477	2.16	1989	1585	2.65	2335	1753	3.58	3262	—	—	—
3000	1489	2.36	2032	1529	2.52	2223	1598	2.73	2444	1767	3.69	3360	—	—	—

50TFQ007 (6 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	1395	1.46	1301	1475	1.56	1387	1542	1.71	1517	1607	1.94	1761	1667	2.16	1967
1900	1430	1.58	1404	1504	1.69	1499	1556	1.82	1613	1621	2.06	1874	1682	2.30	2093
2000	1459	1.67	1482	1532	1.82	1613	1588	1.97	1744	1655	2.23	2029	**1717**	**2.49**	**2266**
2100	1489	1.80	1595	1567	1.99	1761	1626	2.16	1910	**1694**	**2.44**	**2224**	**1758**	**2.73**	**2485**
2200	1528	1.95	1726	1603	2.17	1919	1666	2.37	2093	**1736**	**2.68**	**2441**	—	—	—
2300	1561	2.13	1884	1637	2.35	2076	**1710**	**2.54**	**2272**	**1782**	**2.87**	**2616**	—	—	—
2400	1584	2.28	2015	1671	2.55	2249	**1756**	**2.70**	**2467**	—	—	—	—	—	—
2500	1633	2.53	2232	**1698**	**2.72**	**2405**	1779	3.13	2848	—	—	—	—	—	—
2600	1675	2.77	2436	1768	3.26	2964	—	—	—	—	—	—	—	—	—
2700	1775	3.45	3141	—	—	—	—	—	—	—	—	—	—	—	—
2800	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2900	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Motor drive range: 1300 to 1685 rpm. All other rpms require field-supplied drive.

Refer to page 65 for general Fan Performance notes.

NOTES:

1. **Boldface** indicates field-supplied drive is required.
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum continuous bhp is 2.9 and the maximum continuous watts are 2562.

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

50TFQ008 (7 1/2 TONS)* — STANDARD MOTOR AND DRIVE AND ALTERNATE DRIVE (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			1.0			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2250	**511**	**0.52**	**539**	592	0.74	708	659	0.95	875	722	1.19	1072	778	1.43	1275	829	1.68	1491
2300	**518**	**0.55**	**562**	599	0.77	731	665	0.98	899	727	1.22	1097	783	1.47	1310	834	1.72	1526
2400	**534**	**0.61**	**607**	613	0.84	787	677	1.06	965	738	1.30	1165	794	1.55	1378	844	1.81	1604
2500	**549**	**0.67**	**653**	627	0.90	835	690	1.14	1031	750	1.38	1233	805	1.64	1456	855	1.91	1691
2550	**557**	**0.71**	**684**	633	0.94	867	697	1.18	1064	756	1.42	1267	811	1.69	1499	861	1.96	1735
2600	**565**	**0.74**	**708**	639	0.97	891	703	1.22	1097	761	1.46	1301	816	1.74	1543	866	2.01	1779
2700	**581**	**0.81**	**763**	652	1.04	948	717	1.31	1173	773	1.55	1378	827	1.83	1621	878	2.12	1875
2800	597	0.89	827	665	1.12	1014	733	1.40	1250	786	1.66	1473	839	1.93	1709	889	2.23	1971
2900	613	0.97	891	679	1.20	1081	745	1.50	1335	799	1.76	1560	850	2.04	1805	900	2.34	2067
3000	629	1.06	965	694	1.29	1156	759	1.59	1413	812	1.88	1665	862	2.15	1901	911	2.46	2171
3100	646	1.15	1039	709	1.39	1241	772	1.70	1508	825	1.99	1761	875	2.28	2015	923	2.58	2275
3200	662	1.25	1123	724	1.50	1335	785	1.80	1595	840	2.11	1866	887	2.41	2128	934	2.71	2386
3300	679	1.35	1207	740	1.61	1430	798	1.91	1691	854	2.24	1980	900	2.54	2240	946	2.85	2504
3400	696	1.46	1301	756	1.73	1534	811	2.02	1788	868	2.37	2093	914	2.69	2369	959	3.00	2629
3500	712	1.57	1396	771	1.85	1639	824	2.14	1892	881	2.50	2206	928	2.84	2495	971	3.16	2759
3600	729	1.69	1499	787	1.98	1753	839	2.21	2006	894	2.64	2326	942	2.99	2620	984	3.22	2886
3700	746	1.85	1613	803	2.12	1875	854	2.42	2136	907	2.78	2445	956	3.15	2751	997	3.49	3017
3750	755	1.89	1674	811	2.20	1945	862	2.49	2197	914	2.85	2504	963	3.23	2815	—	—	—

50TFQ008 (7 1/2 TONS)* — STANDARD MOTOR AND DRIVE AND ALTERNATE DRIVE (BELT DRIVE) (cont)

Airflow (Cfm)	External Static Pressure (in. wg)											
	1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2250	884	1.97	1744	**937**	**2.33**	**2058**	947	2.66	2343	1022	3.10	2710
2300	885	2.00	1770	**939**	**2.36**	**2084**	979	2.69	2369	1025	3.12	2727
2400	892	2.08	1840	**944**	**2.40**	**2119**	987	2.76	2428	1039	3.20	2791
2500	902	2.18	1927	949	2.48	2188	1002	2.84	2495	1041	3.25	2831
2550	908	2.24	1980	953	2.53	2232	1003	2.87	2521	1045	3.28	2854
2600	913	2.29	2023	957	2.58	2275	1004	2.91	2554	1050	3.31	2878
2700	924	2.40	2120	967	2.70	2377	1010	3.01	2637	1056	3.37	2925
2800	935	2.52	2223	978	2.62	2479	1019	3.13	2735	1061	3.47	3002
2900	946	2.65	2335	989	2.96	2595	1030	3.27	2847	—	—	—
3000	957	2.78	2445	1000	3.09	2702	1040	3.41	2956	—	—	—
3100	968	2.91	2554	1011	3.24	2832	—	—	—	—	—	—
3200	980	3.04	2661	1022	3.38	2933	—	—	—	—	—	—
3300	991	3.18	2775	—	—	—	—	—	—	—	—	—
3400	1003	3.32	2886	—	—	—	—	—	—	—	—	—
3500	1014	3.48	3009	—	—	—	—	—	—	—	—	—
3600	—	—	—	—	—	—	—	—	—	—	—	—
3700	—	—	—	—	—	—	—	—	—	—	—	—
3750	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Standard motor drive range: 590 to 840 rpm. Alternate motor drive range: 685 to 935 rpm. All other rpms require field-supplied drive.

Refer to page 65 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum usable watts input is 2120 and maximum continuous bhp is 2.40.

Performance data (cont)

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

50TFQ008 (7 1/2 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2250	**514**	**0.55**	**562**	**593**	**0.76**	**723**	**662**	**0.99**	**907**	**724**	**1.22**	**1097**	**781**	**1.48**	**1318**
2300	**521**	**0.57**	**577**	**600**	**0.79**	**747**	**668**	**1.02**	**932**	**730**	**1.26**	**1131**	**786**	**1.50**	**1335**
2400	**536**	**0.63**	**623**	**613**	**0.85**	**795**	**680**	**1.09**	**989**	**741**	**1.34**	**1199**	**796**	**1.59**	**1413**
2500	**551**	**0.69**	**669**	**626**	**0.93**	**859**	**693**	**1.17**	**1056**	**753**	**1.43**	**1275**	**808**	**1.69**	**1499**
2550	**559**	**0.72**	**692**	**634**	**0.97**	**891**	**700**	**1.21**	**1089**	**759**	**1.48**	**1318**	**814**	**1.74**	**1543**
2600	**567**	**0.75**	**716**	**641**	**1.00**	**916**	**706**	**1.25**	**1123**	**764**	**1.52**	**1353**	**819**	**1.79**	**1587**
2700	**582**	**0.83**	**779**	**655**	**1.08**	**981**	**719**	**1.34**	**1199**	**776**	**1.61**	**1430**	**831**	**1.89**	**1674**
2800	**598**	**0.90**	**835**	**670**	**1.17**	**1056**	**732**	**1.43**	**1275**	**789**	**1.71**	**1617**	**842**	**2.00**	**1770**
2900	**614**	**0.98**	**899**	**684**	**1.25**	**1123**	**745**	**1.53**	**1361**	**802**	**1.81**	**1604**	**854**	**2.11**	**1866**
3000	**630**	**1.07**	**973**	**699**	**1.35**	**1207**	**759**	**1.63**	**1147**	**815**	**1.92**	**1700**	866	2.23	1971
3100	**646**	**1.16**	**1047**	**714**	**1.45**	**1292**	**773**	**1.74**	**1543**	**828**	**2.04**	**1805**	878	2.35	2076
3200	**662**	**1.28**	**1131**	**729**	**1.55**	**1378**	**787**	**1.86**	**1648**	**841**	**2.16**	**1910**	891	2.48	2188
3300	**679**	**1.36**	**1216**	**744**	**1.66**	**1473**	**801**	**1.98**	**1753**	**854**	**2.29**	**2023**	904	2.61	2300
3400	**695**	**1.47**	**1310**	**759**	**1.78**	**1578**	**816**	**2.10**	**1868**	867	2.42	2136	917	2.75	2420
3500	**712**	**1.59**	**1413**	**774**	**1.90**	**1683**	**830**	**2.23**	**1971**	881	2.56	2257	930	2.90	2546
3600	**729**	**1.71**	**1617**	**790**	**2.03**	**1796**	**845**	**2.37**	**2093**	895	2.71	2386	943	3.05	2670
3700	**745**	**1.84**	**1630**	**805**	**2.17**	**1919**	860	2.52	2223	909	2.87	2521	956	3.22	2807
3750	**754**	**1.91**	**1691**	**813**	**2.24**	**1980**	868	2.59	2283	917	2.95	2587	963	3.30	2870

50TFQ008 (7 1/2 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2250	**841**	**1.81**	**1604**	902	2.25	1989	939	2.60	2292	979	2.94	2589	1015	3.29	2892
2300	**843**	**1.83**	**1621**	905	2.28	2015	943	2.52	2309	983	2.96	2609	1020	3.31	2914
2400	**848**	**1.88**	**1665**	910	2.31	2041	952	2.74	2411	992	3.10	2729	1029	3.46	3048
2500	**859**	**1.96**	**1735**	912	2.31	2050	963	2.81	2470	1004	3.18	2798	1041	3.55	3126
2550	864	2.01	1779	915	2.34	2067	968	2.81	2479	1009	3.18	2798	1047	3.55	3126
2600	869	2.06	1823	918	2.37	2093	973	2.81	2487	1014	3.18	2798	1052	3.55	3126
2700	880	2.17	1919	927	2.47	2180	976	2.84	2495	1017	3.21	2828	1055	3.59	3159
2800	892	2.29	2023	938	2.58	2275	983	2.92	2562	1024	3.30	2908	1063	3.69	3248
2900	903	2.42	2136	949	2.71	2386	993	3.03	2653	1035	3.43	3017	1074	3.83	3370
3000	915	2.54	2240	961	2.85	2504	1003	3.17	2767	1045	3.59	3157	1084	4.01	3526
3100	926	2.67	2352	972	3.00	2629	1015	3.32	2886	1058	3.76	3306	1097	4.20	3693
3200	938	2.81	2470	983	3.14	2743	1026	3.47	3002	1069	3.93	3456	—	—	—
3300	950	2.95	2587	995	3.30	2870	1043	3.80	3341	—	—	—	—	—	—
3400	963	3.10	2710	1007	3.45	2987	1055	3.97	3493	—	—	—	—	—	—
3500	976	3.25	2831	1030	3.82	3362	—	—	—	—	—	—	—	—	—
3600	988	3.41	2956	1043	4.01	3528	—	—	—	—	—	—	—	—	—
3700	1019	3.90	3431	—	—	—	—	—	—	—	—	—	—	—	—
3750	1026	4.00	3517	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Motor drive range: 860 to 1080 rpm. All other rpms require field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. Shaded cells indicate field-supplied motor and drive are required.
3. Maximum continuous bhp is 3.7 and the maximum continuous watts are 3313.

Refer to page 65 for general Fan Performance notes.

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

50TFQ009 (8 TONS)* — STANDARD MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			1.0			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2550	**557**	**0.71**	**684**	**633**	**0.94**	**867**	697	1.18	1064	756	1.42	1267	811	1.69	1499	861	1.96	1735
2600	**565**	**0.74**	**708**	**639**	**0.97**	**891**	703	1.22	1097	761	1.46	1301	816	1.74	1543	866	2.01	1779
2700	**581**	**0.81**	**763**	**652**	**1.04**	**948**	717	1.31	1173	773	1.55	1378	827	1.83	1621	878	2.12	1875
2800	**597**	**0.89**	**827**	**665**	**1.12**	**1014**	733	1.40	1250	786	1.66	1473	839	1.93	1709	889	2.23	1971
2900	**613**	**0.97**	**891**	**679**	**1.20**	**1081**	745	1.50	1335	799	1.76	1560	850	2.04	1805	900	2.34	2067
3000	**629**	**1.06**	**965**	694	1.29	1156	759	1.59	1413	812	1.88	1665	862	2.15	1901	911	2.46	2171
3100	**646**	**1.15**	**1039**	709	1.39	1241	772	1.70	1508	825	1.99	1761	875	2.28	2015	923	2.58	2275
3200	**662**	**1.25**	**1123**	724	1.50	1335	785	1.80	1595	840	2.11	1866	887	2.41	2128	934	2.71	2386
3300	**679**	**1.35**	**1207**	740	1.61	1430	798	1.91	1691	854	2.24	1980	900	2.54	2240	946	2.85	2504
3400	696	1.46	1301	756	1.73	1534	811	2.02	1788	868	2.37	2093	914	2.69	2369	959	3.00	2629
3500	712	1.57	1396	771	1.85	1639	824	2.14	1892	881	2.50	2206	928	2.84	2495	971	3.16	2759
3600	729	1.69	1499	787	1.98	1753	839	2.27	2006	894	2.64	2326	942	2.99	2620	984	3.32	2886
3700	746	1.82	1613	803	2.12	1875	854	2.42	2136	907	2.78	2445	956	3.15	2751	997	3.49	3017
3750	755	1.89	1674	811	2.20	1945	862	2.49	2197	914	2.85	2504	963	3.23	2815	—	—	—
3800	763	1.95	1726	819	2.27	2006	869	2.56	2257	920	2.92	2562	970	3.31	2878	—	—	—
3900	780	2.09	1849	835	2.42	2136	884	2.72	2394	933	3.07	2686	983	3.48	3009	—	—	—
4000	796	2.23	1971	851	2.56	2257	900	2.89	2537	946	3.23	2815	—	—	—	—	—	—
4100	813	2.39	2110	867	2.74	2411	915	3.06	2678	960	3.40	2948	—	—	—	—	—	—
4200	830	2.55	2249	883	2.91	2554	931	3.24	2823	—	—	—	—	—	—	—	—	—
4250	839	2.63	2317	892	3.00	2629	939	3.34	2902	—	—	—	—	—	—	—	—	—

50TFQ009 (8 TONS)* — STANDARD MOTOR (BELT DRIVE) (cont)

Airflow (Cfm)	External Static Pressure (in. wg)											
	1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2550	908	2.24	1980	953	2.53	2232	1003	2.87	2521	1045	3.28	2854
2600	913	2.29	2023	957	2.58	2275	1004	2.91	2554	1050	3.31	2878
2700	924	2.40	2120	967	2.70	2377	1010	3.01	2637	1056	3.37	2925
2800	935	2.52	2223	978	2.62	2479	1019	3.13	2735	1061	3.41	3002
2900	946	2.65	2335	989	2.96	2595	1030	3.27	2847	—	—	—
3000	957	2.78	2445	1000	3.09	2702	1040	3.41	2956	—	—	—
3100	968	2.91	2554	1011	3.24	2832	—	—	—	—	—	—
3200	980	3.04	2661	1022	3.38	2933	—	—	—	—	—	—
3300	991	3.18	2775	—	—	—	—	—	—	—	—	—
3400	1003	3.52	2886	—	—	—	—	—	—	—	—	—
3500	1014	3.48	3009	—	—	—	—	—	—	—	—	—
3600	—	—	—	—	—	—	—	—	—	—	—	—
3700	—	—	—	—	—	—	—	—	—	—	—	—
3750	—	—	—	—	—	—	—	—	—	—	—	—
3800	—	—	—	—	—	—	—	—	—	—	—	—
3900	—	—	—	—	—	—	—	—	—	—	—	—
4000	—	—	—	—	—	—	—	—	—	—	—	—
4100	—	—	—	—	—	—	—	—	—	—	—	—
4200	—	—	—	—	—	—	—	—	—	—	—	—
4250	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Motor drive range: 685 to 935 rpm. All other rpms require field-supplied drive.

Refer to page 65 for general Fan Performance notes.

NOTES:

1. **Boldface** indicates field-supplied drive is required.
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum usable watts input is 2120 and maximum continuous bhp is 2.40.

Performance data (cont)

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

50TFQ009 (8½ TONS) — HIGH-STATIC MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2550	559	0.72	692	634	0.97	891	700	1.21	1089	759	1.48	1318	814	1.74	1543
2600	567	0.76	716	641	1.00	916	706	1.25	1123	764	1.52	1353	819	1.79	1587
2700	582	0.83	779	655	1.08	981	719	1.34	1199	776	1.61	1430	831	1.89	1674
2800	598	0.90	835	670	1.17	1056	732	1.43	1275	789	1.71	1517	842	2.00	1770
2900	614	0.98	899	684	1.25	1123	745	1.53	1361	802	1.81	1604	854	2.11	1866
3000	630	1.07	973	690	1.35	1207	759	1.63	1147	816	1.92	1700	866	2.23	1971
3100	646	1.16	1047	714	1.45	1292	773	1.74	1543	828	2.04	1805	878	2.35	2076
3200	662	1.26	1131	729	1.55	1378	787	1.86	1648	841	2.16	1910	891	2.48	2188
3300	679	1.36	1216	744	1.66	1473	801	1.98	1753	854	2.29	2023	904	2.61	2300
3400	695	1.47	1310	759	1.78	1578	816	2.10	1958	867	2.42	2136	917	2.75	2420
3500	712	1.59	1413	774	1.90	1683	830	2.23	1971	881	2.56	2257	930	2.90	2546
3600	729	1.71	1517	790	2.03	1796	845	2.37	2093	895	2.71	2386	943	3.05	2670
3700	745	1.84	1630	805	2.17	1919	860	2.52	2223	909	2.87	2521	956	3.22	2807
3750	754	1.91	1691	813	2.24	1980	868	2.59	2283	917	2.95	2587	963	3.30	2870
3800	762	1.98	1753	821	2.31	2041	875	2.66	2343	924	3.03	2653	970	3.38	2933
3900	779	2.12	1875	836	2.46	2171	890	2.82	2479	938	3.19	2783	981	3.65	3209
4000	796	2.27	2006	852	2.61	2300	905	2.98	2612	953	3.37	2925	996	3.85	3390
4100	813	2.42	2136	868	2.78	2445	920	3.15	2751	974	3.74	3294	—	—	—
4200	830	2.59	2283	884	2.95	2587	935	3.33	2894	990	3.96	3482	—	—	—
4250	839	2.68	2360	890	3.04	2661	965	3.88	3412	—	—	—	—	—	—

50TFQ009 (8½ TONS) — HIGH-STATIC MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2550	864	2.01	1779	915	2.34	2067	968	2.81	2479	991	3.02	2654	1012	3.21	2827
2600	869	2.06	1823	918	2.37	2093	973	2.81	2487	996	3.02	2654	1017	3.21	2827
2700	880	2.17	1919	927	2.47	2180	976	2.84	2495	999	3.05	2682	1021	3.25	2857
2800	892	2.29	2023	938	2.58	2275	983	2.92	2562	1006	3.13	2758	1028	3.34	2938
2900	903	2.42	2136	949	2.71	2386	993	3.03	2653	1017	3.25	2862	1038	3.46	3048
3000	915	2.54	2240	961	2.85	2504	1003	3.17	2767	1027	3.40	2994	1049	3.62	3189
3100	926	2.67	2352	972	3.00	2629	1016	3.32	2886	1040	3.56	3136	1062	3.80	3340
3200	938	2.81	2470	983	3.14	2743	1026	3.47	3002	1050	3.72	3277	1073	3.97	3491
3300	950	2.95	2587	995	3.30	2870	1022	3.58	3146	1046	3.84	3377	1069	4.09	3597
3400	963	3.10	2710	1007	3.45	2987	1034	3.74	3289	1059	4.01	3530	—	—	—
3500	976	3.25	2831	1007	3.56	3137	1034	3.85	3399	1058	4.15	3648	—	—	—
3600	988	3.41	2956	1019	3.74	3292	1047	4.05	3566	—	—	—	—	—	—
3700	992	3.59	3161	1023	3.94	3467	—	—	—	—	—	—	—	—	—
3750	999	3.68	3240	1030	4.04	3554	—	—	—	—	—	—	—	—	—
3800	1006	3.77	3318	1038	4.14	3640	—	—	—	—	—	—	—	—	—
3900	1017	4.07	3580	—	—	—	—	—	—	—	—	—	—	—	—
4000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4200	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4250	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Motor drive range: 860 to 1080 rpm. All other rpms require field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. Shaded cells indicate field-supplied motor and drive are required.
3. Maximum continuous bhp is 3.7 and the maximum continuous watts are 3313.

Refer to page 65 for general Fan Performance notes.

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

50TFQ012 (10 TONS)*

Airflow (Cfm	External Static Pressure (in. wg)																	
	0.2			0.4			0.6			0.8			1.0			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
3000	532	0.64	630	605	0.81	763	670	0.97	891	725	1.12	1014	778	1.28	1148	825	1.43	1275
3100	544	0.70	677	616	0.86	803	680	1.03	940	735	1.20	1081	787	1.36	1216	835	1.52	1353
3200	557	0.75	716	628	0.93	859	690	1.10	998	746	1.28	1148	796	1.44	1284	844	1.61	1430
3300	570	0.81	763	639	0.99	907	700	1.18	1064	757	1.36	1216	805	1.52	1353	854	1.70	1508
3400	583	0.88	818	651	1.06	965	711	1.25	1123	767	1.44	1284	815	1.61	1430	863	1.79	1587
3500	596	0.94	867	663	1.14	1031	721	1.33	1190	777	1.52	1353	826	1.71	1517	871	1.88	1665
3600	609	1.01	924	674	1.22	1097	732	1.42	1267	787	1.61	1430	836	1.80	1595	880	1.98	1753
3700	622	1.09	989	686	1.30	1165	744	1.50	1335	797	1.70	1508	847	1.91	1691	890	2.09	1849
3800	635	1.16	1047	698	1.39	1241	755	1.59	1413	808	1.80	1595	857	2.01	1779	901	2.20	1945
3900	649	1.25	1123	713	1.48	1318	767	1.68	1491	818	1.90	1683	867	2.11	1866	912	2.32	2050
4000	662	1.33	1190	722	1.57	1396	778	1.78	1578	829	2.01	1779	878	2.22	1962	922	2.44	2203
4100	675	1.42	1267	734	1.67	1482	790	1.89	1674	839	2.12	1875	888	2.33	2058	933	2.56	2309
4200	689	1.52	1353	746	1.77	1569	801	1.99	1761	851	2.23	1971	898	2.45	2212	943	2.69	2424
4300	702	1.61	1430	759	1.88	1665	813	2.11	1866	862	2.34	2067	908	2.58	2326	953	2.81	2533
4400	715	1.72	1526	772	1.99	1761	825	2.22	1962	873	2.46	2221	919	2.71	2442	**963**	**2.94**	**2651**
4500	729	1.83	1621	785	2.10	1858	837	2.35	2076	885	2.59	2335	929	2.85	2569	**973**	**3.08**	**2782**
4600	742	1.94	1718	797	2.22	1962	848	2.48	2238	896	2.72	2451	**940**	**2.98**	**2688**	**984**	**3.22**	**2914**
4700	756	2.06	1823	810	2.34	2067	860	2.61	2353	908	2.86	2578	**951**	**3.12**	**2727**	**994**	**3.38**	**3068**
4800	770	2.18	1927	823	2.46	2221	872	2.75	2505	**919**	**3.00**	**2707**	**963**	**3.27**	**2847**	**1003**	**3.43**	**3202**
4900	783	2.31	2041	836	2.60	2344	884	2.89	2605	**931**	**3.14**	**2838**	**974**	**3.41**	**2956**	**1013**	**3.59**	**3349**
5000	797	2.44	2203	849	2.73	2460	**897**	**3.04**	**2661**	**943**	**3.30**	**2870**	**984**	**3.44**	**3211**	**1023**	**3.75**	**3501**

50TFQ012 (10 TONS)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)											
	1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
3000	874	1.60	1422	926	1.82	1613	974	2.11	1920	1012	2.41	2134
3100	880	1.68	1491	933	1.87	1656	983	2.16	1963	1017	2.44	2177
3200	888	1.77	1569	934	1.94	1718	988	2.18	1980	1025	2.47	2230
3300	897	1.86	1648	940	2.03	1853	989	2.24	2031	1032	2.53	2282
3400	907	1.97	1744	947	2.14	1946	991	2.32	2099	1038	2.57	2318
3500	916	2.07	1831	956	2.25	2039	997	2.43	2195	1043	2.64	2380
3600	926	2.18	1927	966	2.41	2134	1004	2.54	2291	1045	2.74	2478
3700	934	2.28	2015	976	2.48	2238	1013	2.66	2397	1051	2.85	2569
3800	943	2.41	2160	985	2.60	2334	1023	2.79	2514	**1059**	**2.98**	**2688**
3900	952	2.51	2265	994	2.72	2451	**1032**	**2.92**	**2633**	**1068**	**3.12**	**2819**
4000	962	2.63	2371	1003	2.84	2560	**1042**	**3.06**	**2763**	**1078**	**3.26**	**2952**
4100	973	2.77	2496	**1011**	**2.97**	**2679**	**1051**	**3.20**	**2895**	**1087**	**3.41**	**3097**
4200	**983**	**2.91**	**2624**	**1021**	**3.11**	**2810**	**1060**	**3.34**	**3029**	**1090**	**3.51**	**3276**
4300	**994**	**3.05**	**2754**	**1031**	**3.25**	**2943**	**1068**	**3.48**	**3166**	**1097**	**3.70**	**3453**
4400	**1004**	**3.19**	**2885**	**1042**	**3.41**	**3097**	**1080**	**3.63**	**3388**	**1105**	**3.91**	**3642**
4500	**1015**	**3.33**	**2020**	**1051**	**3.45**	**3218**	**1090**	**3.75**	**3493**	**1112**	**4.12**	**3843**
4600	**1025**	**3.48**	**3166**	**1060**	**3.61**	**3369**	**1100**	**3.92**	**3655**	**1119**	**4.35**	**4057**
4700	**1037**	**3.58**	**3335**	**1070**	**3.84**	**3325**	**1111**	**4.10**	**3822**	**1126**	**4.59**	**4284**
4800	**1048**	**3.75**	**3494**	**1080**	**3.95**	**3686**	**1121**	**4.28**	**3995**	**1133**	**4.85**	**4523**
4900	**1060**	**3.92**	**3659**	**1089**	**4.13**	**3854**	**1132**	**4.48**	**4174**	**1140**	**5.12**	**4775**
5000	**1072**	**4.11**	**3830**	**1099**	**4.32**	**4027**	**1144**	**4.67**	**4359**	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Standard motor drive range: 685 to 935 rpm. Alternate motor drive range: 835 to 1085 rpm. High-static motor drive range is 830 to 1130 rpm. All other rpms require field-supplied drive.

Refer to page 65 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates high-static motor and drive are required.
2. Maximum usable watts input is 2120 with standard motor, 2615 with alternate motor, and 4400 for the high-static motor. Maximum continuous bhp is 2.40 with standard motor, 2.90 with alternate motor, and 5.25 for the high-static motor.

Performance data (cont)

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS

50TFQ004 (3 TONS) — STANDARD MOTOR (DIRECT DRIVE)

Airflow (Cfm)	Low Speed						High Speed					
	208 v			230, 460, 575 v			208 v			230, 460, 575 v		
	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts
900	0.72	0.21	253	0.75	0.23	277	0.73	0.26	307	0.76	0.31	363
1000	0.67	0.23	270	0.69	0.25	292	0.70	0.27	321	0.71	0.32	374
1100	0.61	0.24	287	0.63	0.26	307	0.64	0.28	335	0.65	0.33	385
1200	0.57	0.26	304	0.58	0.27	323	0.56	0.29	349	0.59	0.34	397
1300	0.51	0.27	321	0.53	0.29	338	0.53	0.31	364	0.54	0.34	408
1400	0.44	0.29	338	0.46	0.30	354	0.47	0.32	378	—	—	—
1500	0.39	0.30	355	0.41	0.31	369	0.43	0.33	392	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
ESP — External Static Pressure (in. wg)
Watts — Input Watts to Motor

Refer to page 65 for general Fan Performance notes.

50TFQ004 (3 TONS) — ALTERNATE MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.1			0.2			0.3			0.4			0.5			0.6		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	**526**	**0.06**	**70**	**584**	**0.08**	**99**	**656**	**0.12**	**139**	**734**	**0.22**	**219**	818	0.25	269	875	0.27	289
1000	**570**	**0.09**	**109**	**627**	**0.13**	**149**	**738**	**0.19**	**189**	800	0.26	259	848	0.29	288	895	0.31	308
1100	**614**	**0.13**	**149**	**670**	**0.16**	**189**	**758**	**0.23**	**229**	812	0.29	288	863	0.32	308	914	0.35	348
1200	**658**	**0.16**	**189**	**710**	**0.23**	**229**	780	0.28	279	840	0.32	318	889	0.36	358	938	0.40	398
1300	**703**	**0.20**	**239**	**752**	**0.27**	**269**	808	0.32	318	868	0.37	368	916	0.41	408	963	0.45	448
1400	**725**	**0.29**	**288**	776	0.31	308	845	0.38	378	891	0.42	418	937	0.47	467	983	0.51	507
1500	**755**	**0.33**	**328**	816	0.38	378	870	0.43	428	924	0.48	477	969	0.53	527	**1014**	**0.58**	**577**

50TFQ004 (3 TONS) — ALTERNATE MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)																	
	0.7			0.8			0.9			1.0			1.1			1.2		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	924	0.32	308	953	0.35	348	989	0.38	388	**1028**	**0.42**	**438**	**1074**	**0.49**	**487**	**1120**	**0.54**	**537**
1000	936	0.35	348	977	0.39	388	**1020**	**0.44**	**438**	**1064**	**0.48**	**477**	**1124**	**0.54**	**537**	**1185**	**0.60**	**597**
1100	960	0.39	388	**1005**	**0.43**	**428**	**1052**	**0.49**	**487**	**1100**	**0.52**	**527**	**1163**	**0.59**	**587**	**1225**	**0.65**	**647**
1200	960	0.45	388	**1038**	**0.50**	**497**	**1076**	**0.53**	**527**	**1136**	**0.59**	**577**	**1201**	**0.65**	**647**	**1266**	**0.72**	**716**
1300	**1012**	**0.51**	**507**	**1061**	**0.56**	**557**	**1090**	**0.61**	**607**	**1172**	**0.65**	**647**	**1239**	**0.72**	**716**	**1306**	**0.79**	**786**
1400	**1027**	**0.56**	**557**	**1071**	**0.60**	**597**	**1108**	**0.67**	**666**	**1208**	**0.70**	**706**	**1278**	**0.79**	**786**	**1347**	**0.87**	**865**
1500	**1056**	**0.63**	**627**	**1097**	**0.68**	**676**	**1117**	**0.70**	**696**	**1245**	**0.74**	**776**	**1315**	**0.87**	**865**	**1385**	**0.96**	**955**

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Motor drive range: 760 to 1000 rpm. All other rpms require field-supplied drive.

Refer to page 65 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. Maximum usable watts input is 1000 and maximum continuous bhp is 1.00.

50TFQ004 (3 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	**584**	**0.08**	**99**	**734**	**0.22**	**219**	**875**	**0.27**	**269**	**953**	**0.35**	**348**	**1028**	**0.42**	**438**
1000	**627**	**0.13**	**149**	**800**	**0.26**	**259**	**895**	**0.31**	**308**	**977**	**0.39**	**388**	**1064**	**0.48**	**477**
1100	**670**	**0.16**	**189**	**812**	**0.29**	**288**	**914**	**0.35**	**348**	**1005**	**0.43**	**428**	1100	0.52	527
1200	**710**	**0.23**	**229**	**840**	**0.32**	**318**	**938**	**0.40**	**398**	**1038**	**0.50**	**497**	1136	0.59	577
1300	**752**	**0.27**	**269**	**868**	**0.37**	**368**	**963**	**0.45**	**448**	**1061**	**0.56**	**557**	1172	0.65	647
1400	**776**	**0.31**	**308**	**891**	**0.42**	**418**	**983**	**0.51**	**507**	**1071**	**0.60**	**597**	1208	0.70	706
1500	**816**	**0.38**	**378**	**924**	**0.48**	**477**	**1014**	**0.58**	**577**	1097	0.68	676	1245	0.74	776

50TFQ004 (3 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	1120	0.54	537	1155	0.59	589	1186	0.64	639	1215	0.69	685	1240	0.73	730
1000	1185	0.60	597	1222	0.66	655	1255	0.71	709	1285	0.77	761	1312	0.82	811
1100	1225	0.65	647	1263	0.71	709	1298	0.77	769	1328	0.83	825	1357	0.88	879
1200	1266	0.72	716	1306	0.79	786	1341	0.86	851	1373	0.92	914	1402	0.98	973
1300	1306	0.79	786	1347	0.87	862	1383	0.94	934	1416	1.01	1003	1446	1.07	1068
1400	1347	0.87	865	1389	0.95	950	1427	1.03	1029	**1461**	**1.11**	**1104**	**1492**	**1.18**	**1176**
1500	1385	0.96	955	1428	1.05	1048	**1467**	**1.14**	**1135**	**1502**	**1.22**	**1218**	**1534**	**1.30**	**1298**

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Motor drive range: 1075 to 1455 rpm. All other rpms require field-supplied drive.

Refer to page 65 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. Maximum continuous bhp is 2.4 and the maximum continuous watts are 2120.

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

50TFQ005 (4 TONS) — STANDARD MOTOR (DIRECT DRIVE)

Airflow (Cfm)	Low Speed						High Speed					
	208 v			230, 460, 575 v			208 v			230, 460, 575 v		
	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts
1200	0.93	0.41	458	0.97	0.45	506	1.04	0.51	572	1.09	0.56	632
1300	0.86	0.42	471	0.90	0.46	521	0.96	0.52	589	1.02	0.58	651
1400	0.78	0.45	503	0.84	0.49	556	0.90	0.54	616	0.96	0.60	681
1500	0.73	0.47	536	0.76	0.52	593	0.83	0.56	631	0.89	0.62	698
1600	0.67	0.49	557	0.70	0.54	616	0.75	0.58	654	0.82	0.64	723
1700	0.60	0.52	584	0.63	0.57	646	0.67	0.60	678	0.74	0.66	750
1800	0.51	0.54	610	0.54	0.60	674	0.62	0.62	698	0.69	0.68	772
1900	0.40	0.56	629	0.45	0.62	696	0.54	0.64	720	0.62	0.70	796
2000	0.32	0.58	661	0.33	0.65	731	0.47	0.66	744	0.54	0.73	823

LEGEND

Bhp — Brake Horsepower Input to Fan
ESP — External Static Pressure (in. wg)
Watts — Input Watts to Motor

Refer to page 65 for general Fan Performance notes.

50TFQ005 (4 TONS) — ALTERNATE MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)																				
	0.1			0.2			0.3			0.4			0.6			0.7			0.8		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	**514**	**0.15**	**158**	**590**	**0.20**	**210**	**657**	**0.25**	**263**	**723**	**0.30**	**315**	**828**	**0.42**	**441**	876	0.49	510	924	0.55	578
1300	**545**	**0.18**	**189**	**615**	**0.23**	**242**	**680**	**0.29**	**305**	**744**	**0.35**	**368**	849	0.47	494	895	0.54	562	940	0.60	630
1400	**577**	**0.21**	**221**	**642**	**0.27**	**284**	**704**	**0.33**	**347**	**766**	**0.39**	**410**	870	0.52	546	915	0.59	620	959	0.66	693
1500	**609**	**0.26**	**273**	**670**	**0.31**	**326**	**729**	**0.38**	**394**	**788**	**0.44**	**462**	892	0.58	609	936	0.65	683	980	0.72	757
1600	**642**	**0.30**	**315**	**699**	**0.36**	**378**	**755**	**0.43**	**447**	**811**	**0.49**	**515**	913	0.64	672	957	0.72	751	1001	0.79	830
1700	**675**	**0.36**	**378**	**728**	**0.42**	**441**	**782**	**0.49**	**510**	836	0.55	578	935	0.71	746	979	0.79	825	1023	0.86	904
1800	**709**	**0.41**	**431**	**759**	**0.48**	**504**	**810**	**0.55**	**578**	860	0.62	651	957	0.78	820	1001	0.86	904	1044	0.94	988
1900	**743**	**0.48**	**504**	**790**	**0.55**	**578**	838	0.62	651	886	0.69	725	980	0.86	904	1023	0.95	993	1066	1.03	1082
2000	**778**	**0.55**	**578**	836	0.62	651	875	0.70	730	913	0.77	809	1004	0.94	988	1046	1.03	1082	1088	1.12	1177

50TFQ005 (4 TONS) — ALTERNATE MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)																	
	1.0			1.1			1.2			1.4			1.6			1.8		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	999	0.66	674	1018	0.67	685	1036	0.68	695	1073	0.71	756	1109	0.75	794	1138	0.79	851
1300	1025	0.74	756	1058	0.79	807	1090	0.84	858	1121	0.87	832	1159	0.90	918	**1193**	**0.95**	**976**
1400	1042	0.81	828	1080	0.88	899	1118	0.95	971	1175	1.06	1014	1206	1.09	1042	1244	1.12	1138
1500	1060	0.88	899	1098	0.96	981	1136	1.04	1063	1205	1.19	1138	1258	1.30	1243	1289	1.34	1282
1600	1080	0.95	971	1117	1.04	1058	1153	1.12	1140	1224	1.29	1234	1287	1.45	1387	1337	1.56	1492
1700	1101	1.03	1053	1137	1.12	1139	1172	1.20	1226	1241	1.38	1320	1307	1.56	1492	1366	1.73	1655
1800	1122	1.11	1134	1157	1.20	1226	1192	1.29	1318	1258	1.48	1415	1323	1.67	1597	1385	1.86	1779
1900	1143	1.21	1237	1179	1.30	1328	1214	1.39	1420	1279	1.58	1511	1341	1.78	1702	1402	1.98	1894
2000	1165	1.31	1339	1200	1.40	1431	1235	1.49	1523	1300	1.69	1616	1361	1.90	1817	1419	2.10	2008

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Motor drive range: 835 to 1185 rpm. All other rpms require field-supplied drive.
Refer to page 65 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum usable watts input is 1000 and maximum continuous bhp is 1.00.

50TFQ005 (4 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	**641**	**0.23**	**242**	**761**	**0.34**	**357**	**859**	**0.46**	**483**	**943**	**0.58**	**609**	**1030**	**0.70**	**695**
1300	**673**	**0.28**	**294**	**788**	**0.39**	**410**	**887**	**0.52**	**546**	**968**	**0.65**	**683**	**1044**	**0.77**	**736**
1400	**705**	**0.33**	**347**	**817**	**0.45**	**473**	**914**	**0.59**	**620**	**996**	**0.72**	**757**	**1069**	**0.86**	**838**
1500	**738**	**0.38**	**399**	**847**	**0.51**	**536**	**940**	**0.65**	**683**	**1024**	**0.81**	**851**	1095	0.95	930
1600	**772**	**0.44**	**462**	**877**	**0.58**	**609**	**967**	**0.73**	**767**	**1051**	**0.89**	**935**	1123	1.05	1073
1700	**806**	**0.51**	**536**	**908**	**0.66**	**693**	**997**	**0.81**	**851**	1077	1.01	1030	1151	1.15	1185
1800	**841**	**0.59**	**620**	**939**	**0.75**	**788**	**1026**	**0.91**	**956**	1104	1.07	1124	1178	1.26	1318
1900	**876**	**0.68**	**714**	**971**	**0.84**	**883**	**1056**	**1.01**	**1061**	1132	1.18	1240	1204	1.37	1502
2000	**912**	**0.77**	**809**	**1004**	**0.94**	**988**	1087	1.12	1177	1162	1.30	1366	1231	1.48	1604

50TFF005 (4 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	1106	0.87	889	1134	0.98	998	1189	1.12	1138	1245	1.21	1358	1292	1.35	1345
1300	1128	0.91	930	1183	1.10	1052	1226	1.23	1215	1297	1.35	1406	1346	1.51	1500
1400	1139	1.01	1012	1218	1.14	1090	1286	1.34	1282	1320	1.48	1463	1370	1.65	1645
1500	1162	1.09	1114	1228	1.24	1186	1303	1.40	1339	1343	1.60	1530	1393	1.79	1778
1600	1185	1.20	1226	1250	1.35	1291	1319	1.51	1444	1382	1.68	1607	1434	1.88	1867
1700	1215	1.31	1339	1276	1.48	1415	1334	1.64	1569	1398	1.80	1722	1451	2.01	2001
1800	1243	1.43	1461	1303	1.61	1540	1359	1.78	1702	1418	1.95	1865	**1471**	**2.18**	**2167**
1900	1271	1.56	1594	1330	1.74	1664	1386	1.93	1846	1439	2.11	2018	**1493**	**2.36**	**2345**
2000	1298	1.69	1727	1358	1.89	1808	1413	2.08	1989	**1466**	**2.27**	**2171**	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Motor drive range: 1075 to 1455 rpm. All other rpms require field-supplied drive.

Refer to page 65 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. Maximum continuous bhp is 2.4 and the maximum continuous watts are 2120.

Performance data (cont)

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

50TFQ006 (5 TONS) — STANDARD MOTOR (DIRECT DRIVE)

Airflow (Cfm)	Low Speed						Medium Speed						High Speed					
	208 v			230, 460, 575 v			208 v			230, 460, 575 v			208 v			230, 460, 575 v		
	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts
1500	1.01	0.67	750	1.25	0.71	791	1.26	0.70	782	1.46	0.76	845	1.46	0.79	875	1.52	0.85	949
1600	0.82	0.70	780	1.09	0.74	824	1.11	0.74	821	1.32	0.79	883	1.33	0.82	913	1.41	0.89	988
1700	0.64	0.73	810	0.97	0.77	857	0.99	0.77	861	1.22	0.83	921	1.24	0.85	950	1.33	0.92	1027
1800	0.44	0.75	839	0.81	0.80	891	0.84	0.80	900	1.09	0.86	959	1.11	0.89	988	1.22	0.96	1066
1900	0.32	0.78	869	0.66	0.83	924	0.69	0.83	940	0.96	0.90	997	0.99	0.92	1025	1.11	0.99	1105
2000	0.21	0.81	899	0.47	0.86	957	0.51	0.86	979	0.80	0.93	1035	0.83	0.95	1063	0.97	1.03	1144
2100	0.13	0.83	929	0.32	0.89	990	0.36	0.89	1018	0.64	0.96	1073	0.71	0.99	1101	0.86	1.06	1183
2200	0.05	0.86	959	0.19	0.92	1023	0.21	0.92	1058	0.50	1.00	1111	0.58	1.02	1138	0.75	1.10	1222
2300	—	—	—	0.08	0.95	1057	0.08	0.95	1097	0.34	1.03	1149	0.39	1.06	1176	0.57	1.13	1261
2400	—	—	—	—	—	—	—	—	—	0.24	1.07	1187	0.29	1.09	1213	0.49	1.17	1300
2500	—	—	—	—	—	—	—	—	—	0.15	1.10	1225	0.15	1.12	1251	0.34	1.20	1340

LEGEND

Bhp — Brake Horsepower Input to Fan
ESP — External Static Pressure (in. wg)
Watts — Input Watts to Motor

Refer to page 65 for general Fan Performance notes.

50TFQ006 (5 TONS) — ALTERNATE MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.1			0.2			0.4			0.6			0.8		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	**658**	**0.27**	**276**	**722**	**0.33**	**337**	**840**	**0.46**	**470**	937	0.59	603	1027	0.74	756
1600	**693**	**0.32**	**327**	**754**	**0.38**	**388**	**867**	**0.52**	**531**	963	0.65	664	1052	0.81	828
1700	**729**	**0.38**	**388**	**787**	**0.44**	**450**	**895**	**0.58**	**593**	991	0.73	746	1075	0.88	899
1800	**765**	**0.45**	**460**	**821**	**0.51**	**521**	923	0.65	664	1019	0.81	828	1099	0.96	981
1900	**802**	**0.52**	**531**	**854**	**0.58**	**593**	953	0.73	746	1046	0.90	920	1126	1.06	1083
2000	**840**	**0.60**	**613**	**900**	**0.66**	**674**	984	0.82	838	1073	0.99	1012	1154	1.16	1185
2100	**878**	**0.69**	**705**	923	0.75	766	1015	0.91	930	1101	1.08	1104	1182	1.27	1298
2200	916	0.78	797	958	0.85	869	1046	1.01	1032	1129	1.19	1216	1209	1.39	1420
2300	954	0.89	910	993	0.96	981	1079	1.13	1155	1160	1.31	1339	1237	1.51	1543
2400	993	1.00	1022	1029	1.07	1093	1112	1.25	1277	1190	1.43	1461	1264	1.63	1666
2500	1031	1.13	1155	1066	1.20	1226	1145	1.39	1420	1220	1.57	1604	1292	1.77	1809

50TFQ006 (5 TONS) — ALTERNATE MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.0			1.2			1.4			1.6			1.8		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	1108	0.90	920	1186	1.08	1104	1263	1.30	1328	**1343**	**1.58**	**1615**	**1431**	**1.79**	**1829**
1600	1130	0.97	991	1205	1.15	1175	1278	1.35	1380	**1350**	**1.61**	**1645**	**1424**	**1.80**	**1921**
1700	1154	1.06	1083	1226	1.23	1257	1296	1.42	1451	**1364**	**1.64**	**1676**	**1432**	**1.89**	**1931**
1800	1178	1.14	1165	1249	1.32	1349	**1316**	**1.52**	**1553**	**1382**	**1.72**	**1758**	**1447**	**1.95**	**1993**
1900	1201	1.23	1257	1274	1.43	1461	**1338**	**1.62**	**1656**	**1402**	**1.80**	**1870**	**1464**	**2.05**	**2095**
2000	1226	1.33	1359	1297	1.53	1564	**1363**	**1.73**	**1768**	**1424**	**1.94**	**1983**	**1484**	**2.16**	**2207**
2100	1252	1.45	1482	**1320**	**1.64**	**1676**	**1388**	**1.80**	**1891**	**1448**	**2.07**	**2115**	**1505**	**2.29**	**2340**
2200	1280	1.58	1615	**1345**	**1.77**	**1809**	**1410**	**1.97**	**2013**	**1473**	**2.20**	**2248**	1529	2.43	2483
2300	**1309**	**1.71**	**1747**	**1372**	**1.91**	**1952**	**1434**	**2.11**	**2156**	**1496**	**2.34**	**2391**	1554	2.58	2637
2400	**1336**	**1.80**	**1891**	**1400**	**2.06**	**2105**	**1459**	**2.26**	**2310**	1519	2.48	2534	1578	2.76	2820
2500	**1363**	**2.00**	**2044**	**1428**	**2.22**	**2269**	1486	2.43	2483	1543	2.65	2708	1600	2.89	2953

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Motor drive range: 900 to 1300 rpm. All other rpms require field-supplied drive.

Refer to page 65 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum usable watts input is 2120 and maximum continuous bhp is 1.30 for single-phase units and 2.40 for 3-phase units.

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

50TFQ006 (5 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	**789**	**0.40**	**420**	**896**	**0.53**	**557**	**990**	**0.67**	**704**	**1072**	**0.83**	**872**	**1153**	**1.00**	**1051**
1600	**826**	**0.46**	**483**	**931**	**0.61**	**641**	**1020**	**0.75**	**788**	**1101**	**0.91**	**956**	**1178**	**1.09**	**1145**
1700	**865**	**0.54**	**567**	**966**	**0.69**	**725**	**1051**	**0.84**	**883**	**1133**	**1.01**	**1061**	**1205**	**1.18**	**1240**
1800	**905**	**0.62**	**661**	**1002**	**0.78**	**820**	**1084**	**0.93**	**977**	**1163**	**1.10**	**1156**	**1235**	**1.29**	**1355**
1900	**945**	**0.72**	**757**	**1037**	**0.88**	**925**	**1119**	**1.04**	**1093**	**1194**	**1.21**	**1271**	**1266**	**1.40**	**1471**
2000	**984**	**0.82**	**862**	**1072**	**0.98**	**1030**	**1154**	**1.16**	**1219**	**1226**	**1.33**	**1397**	**1297**	**1.53**	**1608**
2100	**1024**	**0.93**	**977**	**1108**	**1.10**	**1156**	**1192**	**1.29**	**1355**	**1259**	**1.47**	**1545**	1327	1.66	1744
2200	**1064**	**1.05**	**1103**	**1145**	**1.22**	**1282**	**1225**	**1.43**	**1503**	**1294**	**1.62**	**1702**	1359	1.80	1902
2300	**1104**	**1.18**	**1240**	**1183**	**1.36**	**1429**	**1260**	**1.57**	**1650**	1330	1.78	1870	1392	1.97	2070
2400	**1145**	**1.32**	**1387**	**1222**	**1.45**	**1524**	**1296**	**1.73**	**1818**	1365	1.94	2038	1426	2.15	2259
2500	**1186**	**1.48**	**1555**	**1262**	**1.68**	**1765**	1331	1.89	1986	1400	2.12	2227	1461	2.34	2459

50TFQ006 (5 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	**1221**	**1.17**	**1229**	**1256**	**1.30**	**1366**	**1283**	**1.32**	**1387**	1303	1.22	1282	1345	1.34	1390
1600	**1252**	**1.27**	**1334**	1311	1.45	1524	1340	1.58	1660	1330	1.61	1692	1373	1.77	1834
1700	**1278**	**1.37**	**1439**	1345	1.57	1650	1397	1.76	1849	1424	1.89	1986	1470	2.08	2153
1800	1303	1.48	1555	1371	1.69	1776	1433	1.90	1996	1480	2.09	2196	1528	2.30	2381
1900	1330	1.59	1671	1396	1.80	1902	1460	2.03	2133	1517	2.25	2364	1566	2.47	2563
2000	1362	1.73	1818	1422	1.94	2038	1485	2.16	2270	1544	2.40	2522	1594	2.64	2734
2100	1393	1.87	1965	1452	2.08	2185	1510	2.31	2427	1570	2.55	2674	1620	2.80	2905
2200	1423	2.02	2122	1483	2.24	2354	1538	2.46	2585	1594	2.71	2821	1645	2.98	3087
2300	1454	2.18	2291	1515	2.41	2532	1571	2.64	2758	1623	2.88	2976	1675	3.17	3280
2400	1485	2.36	2480	1544	2.59	2721	1604	2.84	2947	1657	3.07	3152	1710	3.38	3497
2500	1518	2.55	2679	1574	2.78	2905	1633	3.03	3134	1692	3.28	3345	1746	3.61	3736

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Motor drive range: 1300 to 1685 rpm. All other rpms require field-supplied drive.
Refer to page 65 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum continuous bhp is 2.9 and the maximum continuous watts are 2562.

50TFQ007 (6 TONS) — STANDARD MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.1			0.2			0.4			0.6			0.8		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	**765**	**0.45**	**487**	**821**	**0.51**	**532**	**923**	**0.65**	**638**	**1019**	**0.81**	**843**	1099	0.96	883
1900	**802**	**0.45**	**539**	**854**	**0.58**	**585**	**953**	**0.73**	**700**	**1046**	**0.90**	**835**	1126	1.06	965
2000	**840**	**0.60**	**600**	**888**	**0.66**	**646**	**984**	**0.82**	**771**	1073	0.99	907	1154	1.16	1047
2100	**878**	**0.69**	**669**	**923**	**0.75**	**716**	**1015**	**0.91**	**843**	1101	1.08	981	1182	1.27	1140
2200	**916**	**0.78**	**739**	**958**	**0.85**	**795**	**1046**	**1.01**	**924**	1129	1.19	1072	1209	1.39	1241
2300	**954**	**0.89**	**827**	**993**	**0.96**	**883**	1079	1.13	1022	1160	1.31	1173	1237	1.51	1344
2400	**993**	**1.00**	**916**	**1029**	**1.07**	**973**	1112	1.25	1123	1190	1.43	1275	1264	1.63	1447
2500	**1031**	**1.13**	**1022**	**1066**	**1.20**	**1081**	1145	1.39	1241	1220	1.57	1396	1292	1.77	1569
2600	**1070**	**1.26**	**1131**	1103	1.34	1199	1179	1.52	1353	1251	1.71	1517	1322	1.92	1700
2700	1109	1.41	1258	1140	1.48	1318	1212	1.67	1482	1283	1.87	1656	1352	2.09	1849
2800	1148	1.57	1396	1177	1.64	1456	1246	1.83	1621	1316	2.04	1805	1383	2.26	1997
2900	1188	1.74	1543	1215	1.81	1604	1281	2.00	1770	1349	2.22	1962	1413	2.44	2154
3000	1227	1.92	1700	1253	2.00	1770	1316	2.19	1936	1382	2.42	2136	1444	2.63	2317

50TFQ007 (6 TONS) — STANDARD MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)											
	1.0			1.2			1.4			1.6		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	1178	1.14	1031	1249	1.32	1182	1316	1.52	1353	1382	1.72	1526
1900	1201	1.23	1106	1274	1.43	1275	1338	1.62	1439	1402	1.83	1621
2000	1226	1.33	1990	1297	1.53	1361	1363	1.73	1534	1424	1.94	1718
2100	1252	1.45	1292	1320	1.64	1456	1388	1.85	1639	1448	2.07	1831
2200	1280	1.58	1404	1345	1.77	1569	1410	1.97	1744	**1473**	**2.20**	**1945**
2300	1309	1.71	1517	1372	1.91	1691	1434	2.11	1866	**1496**	**2.34**	**2067**
2400	1336	1.85	1639	1400	2.06	1823	1459	2.26	1997	1519	2.48	2188
2500	1363	2.00	1770	1428	2.22	1962	1486	2.43	2145	1543	2.65	2335
2600	1390	2.15	1901	1456	2.38	2102	1514	2.61	2300	1569	2.83	2487
2700	1418	2.31	2041	1483	2.56	2257	1543	2.80	2462	—	—	—
2800	1446	2.48	2188	1510	2.73	2403	—	—	—	—	—	—
2900	1476	2.67	2352	1537	2.92	2562	—	—	—	—	—	—
3000	1506	2.88	2529	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Motor drive range: 1070 to 1460 rpm. All other rpms require field-supplied drive.

Refer to page 65 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum usable watts input is 2120 and maximum continuous bhp is 2.40.

Performance data (cont)

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

50TFQ007 (6 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	**942**	**0.73**	**700**	**1047**	**0.90**	**835**	**1139**	**1.05**	**956**	**1193**	**1.14**	**1031**	**1276**	**1.30**	**1165**
1900	**982**	**0.83**	**779**	**1084**	**1.02**	**932**	**1160**	**1.11**	**1006**	**1223**	**1.24**	**1114**	1301	1.38	1233
2000	**1022**	**0.94**	**867**	**1121**	**1.12**	**1014**	**1188**	**1.22**	**1097**	**1254**	**1.36**	**1216**	1329	1.44	1284
2100	**1063**	**1.10**	**998**	**1140**	**1.18**	**1064**	**1196**	**1.27**	**1140**	**1272**	**1.45**	**1292**	1354	1.58	1404
2200	**1104**	**1.20**	**1081**	**1159**	**1.23**	**1106**	**1229**	**1.41**	**1258**	1306	1.53	1361	1363	1.70	1508
2300	**1130**	**1.27**	**1140**	**1196**	**1.37**	**1224**	**1264**	**1.56**	**1387**	1340	1.66	1473	1397	1.86	1648
2400	**1174**	**1.37**	**1224**	**1245**	**1.57**	**1396**	1305	1.63	1447	1373	1.84	1630	1440	1.95	1726
2500	**1201**	**1.50**	**1335**	**1284**	**1.65**	**1465**	1338	1.75	1552	1402	1.99	1761	1469	2.04	1805
2600	**1246**	**1.67**	**1482**	1312	1.76	1560	1366	1.96	1735	1435	2.10	1858	1494	2.19	1936
2700	**1285**	**1.80**	**1595**	1354	1.95	1726	1403	2.14	1892	1474	2.21	1954	1536	2.46	2171
2800	1304	1.85	1639	1374	2.12	1875	1459	2.25	1989	1514	2.42	2136	1570	2.66	2343
2900	1345	2.05	1814	1412	2.32	2050	1496	2.54	2240	1529	2.61	2300	1603	2.87	2521
3000	1378	2.30	2032	1451	2.40	2119	1534	2.66	2343	1560	2.81	2470	1611	3.01	2648

50TFQ007 (6 TONS) — HIGH-STATIC MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	1341	1.40	1250	1413	1.55	1378	1474	1.58	1404	1522	1.74	1564	1566	1.89	1704
1900	1374	1.53	1361	1437	1.62	1439	1490	1.67	1482	1538	1.84	1653	1583	2.00	1801
2000	1396	1.66	1473	1460	1.68	1491	1509	1.77	1569	1558	1.95	1752	1603	2.12	1909
2100	1413	1.75	1552	1475	1.73	1534	1529	1.92	1700	1578	2.11	1901	1624	2.30	2070
2200	1434	1.81	1604	1487	1.85	1639	1554	2.07	1831	1604	2.28	2049	1651	2.48	2232
2300	1459	1.88	1665	1520	2.07	1831	1576	2.24	1980	1627	2.46	2218	1674	2.68	2415
2400	1502	2.06	1823	1552	2.24	1980	1604	2.42	2136	1656	2.66	2396	**1704**	**2.90**	**2609**
2500	1524	2.24	1980	1585	2.42	2136	1638	2.60	2292	**1691**	**2.86**	**2574**	1740	3.12	2804
2600	1552	2.40	2119	1616	2.63	2317	1671	2.80	2462	1725	3.08	2772	1775	3.35	3019
2700	1584	2.61	2300	1646	2.83	2487	1706	2.97	2653	1761	3.27	2941	—	—	—
2800	1624	2.85	2504	1677	2.99	2661	1739	3.33	2998	1795	3.67	3299	—	—	—
2900	1671	3.03	2725	1742	3.43	3090	—	—	—	—	—	—	—	—	—
3000	1692	3.49	3140	1764	3.95	3558	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Motor drive range: 1300 to 1685 rpm. All other rpms require field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum continuous bhp is 2.9 and the maximum continuous watts are 2562.

Refer to page 65 for general Fan Performance notes.

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

50TFQ008 (7½ TONS) — STANDARD MOTOR AND DRIVE AND ALTERNATE DRIVE (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2250	**465**	**0.43**	**473**	**554**	**0.64**	**630**	630	0.86	803	695	1.09	989	757	1.34	1199
2300	**471**	**0.45**	**487**	**559**	**0.66**	**646**	635	0.89	827	699	1.12	1014	760	1.37	1224
2400	**482**	**0.50**	**524**	**569**	**0.71**	**684**	645	0.95	875	708	1.18	1064	768	1.44	1284
2500	**494**	**0.54**	**554**	**581**	**0.76**	**723**	654	1.01	924	717	1.25	1123	776	1.51	1344
2550	**501**	**0.57**	**577**	**587**	**0.79**	**747**	659	1.05	956	722	1.29	1156	780	1.55	1378
2660	**507**	**0.59**	**592**	592	0.82	771	663	1.08	981	727	1.32	1182	784	1.58	1404
2700	**520**	**0.65**	**638**	604	0.89	827	672	1.14	1031	737	1.40	1250	793	1.66	1473
2800	**533**	**0.71**	**684**	615	0.95	875	683	1.20	1081	747	1.49	1327	802	1.75	1552
2900	**546**	**0.77**	**731**	626	1.02	932	693	1.27	1140	756	1.57	1396	813	1.84	1630
3000	**559**	**0.83**	**779**	637	1.09	989	704	1.35	1207	765	1.66	1473	823	1.94	1718
3100	**572**	**0.90**	**835**	648	1.17	1056	715	1.43	1275	775	1.74	1543	832	2.05	1814
3200	**585**	**0.96**	**883**	660	1.24	1114	727	1.52	1353	785	1.83	1321	841	2.15	1901
3300	598	1.03	940	671	1.32	1182	739	1.62	1439	795	1.91	1691	851	2.26	1997
3400	610	1.10	998	682	1.41	1258	750	1.72	1526	806	2.01	1779	860	2.36	2084
3500	623	1.17	1056	694	1.50	1335	761	1.82	1613	817	2.11	1866	870	2.47	2180
3600	636	1.25	1123	707	1.60	1422	772	1.93	1709	828	2.23	1971	880	2.57	2266
3700	649	1.33	1190	720	1.71	1517	783	2.03	1796	840	2.35	2076	890	2.69	2369
3750	655	1.37	1224	727	1.77	1569	789	2.09	1849	846	2.42	2136	896	2.75	2420

50TFQ008 (7½ TONS) — STANDARD MOTOR AND DRIVE AND ALTERNATE DRIVE (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2250	810	1.62	1439	850	1.91	1691	873	2.20	1945	883	2.50	2206	895	2.78	2445
2300	816	1.65	1465	859	1.94	1718	888	2.24	1980	903	2.55	2249	911	2.85	2504
2400	824	1.72	1526	872	2.01	1779	909	2.32	2050	931	2.64	2326	935	2.96	2595
2500	832	1.79	1587	882	2.09	1849	925	2.40	2119	955	2.72	2394	972	3.06	2678
2550	836	1.83	1621	887	2.13	1884	931	2.45	2162	964	2.77	2436	986	3.11	2718
2660	839	1.87	1656	891	2.17	1919	936	2.49	2197	973	2.82	2479	999	3.16	2759
2700	846	1.95	1726	898	2.26	1997	946	2.58	2275	987	2.91	2554	1019	3.26	2839
2800	855	2.04	1805	906	2.35	2076	954	2.67	2352	997	3.01	2637	1034	3.36	2917
2900	863	2.13	1884	913	2.44	2154	961	2.77	2436	1006	3.12	2727	—	—	—
3000	872	2.22	1962	921	2.54	2240	969	2.88	2529	1014	3.22	2807	—	—	—
3100	882	2.33	2058	930	2.65	2335	976	2.99	2620	1021	3.34	2902	—	—	—
3200	892	2.45	2162	939	2.76	2428	984	3.10	2710	—	—	—	—	—	—
3300	902	2.57	2266	948	2.88	2529	993	3.21	2799	—	—	—	—	—	—
3400	912	2.69	2369	958	3.01	2637	1002	3.34	2902	—	—	—	—	—	—
3500	921	2.82	2479	968	3.15	2751	—	—	—	—	—	—	—	—	—
3600	930	2.95	2587	978	3.29	2862	—	—	—	—	—	—	—	—	—
3700	940	3.07	2686	—	—	—	—	—	—	—	—	—	—	—	—
3750	945	3.14	2743	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Motor drive range: 590 to 840 rpm. Alternate motor drive range: 685 to 935 rpm. All other rpms require field-supplied drive.

Refer to page 65 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▭ indicates high-static motor and drive are required.
3. Maximum usable watts input is 2120 and maximum continuous bhp is 2.40.

Performance data (cont)

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

50TFQ008 (7½ TONS) — HIGH-STATIC MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2250	**507**	**0.53**	**547**	**586**	**0.73**	**700**	**658**	**0.97**	**891**	**722**	**1.22**	**1097**	**783**	**1.46**	**1301**
2300	**513**	**0.55**	**562**	**592**	**0.76**	**723**	**663**	**1.00**	**916**	**727**	**1.26**	**1131**	**786**	**1.49**	**1327**
2400	**528**	**0.60**	**600**	**606**	**0.83**	**779**	**674**	**1.06**	**965**	**738**	**1.34**	**1199**	**795**	**1.58**	**1404**
2500	**542**	**0.68**	**648**	**619**	**0.90**	**835**	**686**	**1.13**	**1022**	**748**	**1.41**	**1258**	**806**	**1.68**	**1491**
2550	**550**	**0.69**	**669**	**627**	**0.94**	**867**	**692**	**1.17**	**1056**	**754**	**1.45**	**1292**	**812**	**1.74**	**1543**
2660	**557**	**0.72**	**692**	**634**	**0.97**	**891**	**698**	**1.21**	**1089**	**759**	**1.49**	**1327**	**816**	**1.79**	**1587**
2700	**573**	**0.79**	**747**	**648**	**1.05**	**956**	**711**	**1.29**	**1156**	**770**	**1.58**	**1404**	**827**	**1.88**	**1665**
2800	**588**	**0.86**	**803**	**662**	**1.13**	**1022**	**723**	**1.38**	**1233**	**782**	**1.66**	**1473**	**837**	**1.98**	**1763**
2900	**604**	**0.94**	**867**	**676**	**1.21**	**1089**	**737**	**1.48**	**1318**	**794**	**1.76**	**1560**	**849**	**2.08**	**1840**
3000	**620**	**1.02**	**932**	**690**	**1.30**	**1165**	**750**	**1.58**	**1404**	**806**	**1.86**	**1648**	**849**	**2.18**	**1927**
3100	**636**	**1.11**	**1006**	**704**	**1.39**	**1241**	**764**	**1.69**	**1499**	**818**	**1.97**	**1744**	870	2.29	2023
3200	**652**	**1.21**	**1089**	**718**	**1.49**	**1327**	**778**	**1.90**	**1595**	**831**	**2.09**	**1849**	882	2.40	2119
3300	**668**	**1.31**	**1173**	**732**	**1.59**	**1413**	**793**	**1.92**	**1700**	**844**	**2.21**	**1954**	894	2.53	2232
3400	**684**	**1.41**	**1258**	**747**	**1.70**	**1508**	**807**	**2.04**	**1805**	**857**	**2.35**	**2076**	907	2.66	2343
3500	**701**	**1.53**	**1361**	**762**	**1.82**	**1613**	**821**	**2.16**	**1010**	871	2.48	2188	919	2.80	2462
3600	**717**	**1.65**	**1465**	**777**	**1.94**	**1718**	**835**	**2.29**	**2023**	885	2.63	2317	932	2.95	2587
3700	**733**	**1.77**	**1569**	**792**	**2.07**	**1831**	**849**	**2.42**	**2136**	899	2.78	2445	945	3.11	2718
3750	**742**	**1.84**	**1630**	**800**	**2.14**	**1892**	**856**	**2.49**	**2197**	907	2.86	2512	952	3.20	2719

50TFQ008 (7½ TONS) — HIGH-STATIC MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2250	**843**	**1.81**	**1604**	908	2.25	1989	955	2.59	2283	991	2.89	2543	1023	3.19	2805
2300	**846**	**1.84**	**1630**	910	2.25	2015	959	2.61	2300	995	2.91	2563	1028	3.21	2827
2400	**853**	**1.88**	**1665**	912	2.31	2041	967	2.68	2360	1003	2.99	2631	1036	3.30	2902
2500	**859**	**1.94**	**1718**	919	2.37	2093	971	2.73	2403	1007	3.05	2681	1041	3.36	2956
2550	864	1.99	1761	920	2.39	2110	974	2.76	2428	1010	3.08	2710	1044	3.40	2989
2660	868	2.04	1805	921	2.41	2136	976	2.78	2445	1012	3.10	2730	1046	3.42	3011
2700	878	2.16	1910	928	2.45	2162	983	2.88	2529	1020	3.21	2828	1053	3.54	3119
2800	889	2.29	2023	937	2.57	2266	986	2.91	2554	1023	3.25	2857	1057	3.58	3181
2900	900	2.41	2128	947	2.70	2377	993	3.01	2637	1030	3.36	2955	1064	3.70	3260
3000	910	2.52	2223	958	2.85	2504	1002	3.15	2751	1039	3.51	3093	1074	3.88	3411
3100	920	2.64	2326	968	2.99	2620	1012	3.30	2870	1050	3.68	3240	1084	4.06	3574
3200	931	2.76	2428	979	3.13	2735	1023	3.47	3002	1061	3.87	3407	—	—	—
3300	942	2.89	2537	989	3.26	2839	1034	3.63	3121	1072	4.05	3564	—	—	—
3400	954	3.02	2645	1000	3.40	2948	1044	3.79	3237	—	—	—	—	—	—
3500	966	3.15	2751	1011	3.55	3062	1054	3.94	3340	—	—	—	—	—	—
3600	978	3.30	2870	1022	3.69	3165	1065	4.10	3445	—	—	—	—	—	—
3700	990	3.45	2987	1034	3.84	3272	—	—	—	—	—	—	—	—	—
3750	997	3.54	3055	1040	3.93	3333	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Motor drive range: 860 to 1080 rpm. All other rpms require field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum continuous bhp is 3.7 and the maximum continuous watts are 3313.

Refer to page 65 for general Fan Performance notes.

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

50TFQ009 (8 1/2 TONS) — STANDARD MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2550	**501**	**0.57**	**577**	**587**	**0.79**	**747**	**659**	**1.05**	**956**	722	1.29	1156	780	1.55	1378
2660	**507**	**0.59**	**592**	**592**	**0.82**	**771**	**663**	**1.08**	**981**	727	1.32	1182	784	1.58	1404
2700	**520**	**0.65**	**638**	**604**	**0.89**	**827**	**672**	**1.14**	**1031**	737	1.40	1250	793	1.66	1473
2800	**533**	**0.71**	**684**	**615**	**0.95**	**875**	**683**	**1.20**	**1081**	747	1.49	1327	802	1.75	1552
2900	**546**	**0.77**	**731**	**626**	**1.02**	**932**	693	1.27	1140	756	1.57	1396	813	1.84	1630
3000	**559**	**0.83**	**779**	**637**	**1.09**	**989**	704	1.35	1207	765	1.66	1473	823	1.94	1718
3100	**572**	**0.90**	**835**	**648**	**1.17**	**1056**	715	1.43	1275	775	1.74	1543	832	2.05	1814
3200	**585**	**0.96**	**883**	**660**	**1.24**	**1114**	727	1.52	1353	785	1.83	1321	841	2.15	1901
3300	**598**	**1.03**	**940**	**671**	**1.32**	**1182**	739	1.62	1439	795	1.91	1691	851	2.26	1997
3400	**610**	**1.10**	**998**	**682**	**1.41**	**1258**	750	1.72	1526	806	2.01	1779	860	2.36	2084
3500	**623**	**1.17**	**1056**	694	1.50	1335	761	1.82	1613	817	2.11	1866	870	2.47	2180
3600	**636**	**1.25**	**1123**	707	1.60	1422	772	1.93	1709	828	2.23	1971	880	2.57	2266
3700	**649**	**1.33**	**1190**	720	1.71	1517	783	2.03	1796	840	2.35	2076	890	2.69	2369
3750	**655**	**1.37**	**1224**	727	1.77	1569	789	2.09	1849	846	2.42	2136	896	2.75	2420
3800	**661**	**1.41**	**1258**	733	1.82	1613	795	2.15	1901	852	2.48	2188	901	2.80	2462
3900	**674**	**1.49**	**1327**	746	1.93	1709	806	2.26	1997	863	2.61	2300	912	2.93	2571
4000	687	1.57	1396	759	2.05	1814	817	2.38	2102	874	2.75	2420	923	3.08	2694
4100	699	1.60	1473	772	2.17	1919	828	2.50	2206	885	2.88	2529	935	3.23	2815
4200	712	1.75	1552	785	2.30	2032	840	2.64	2326	897	3.03	2653	947	3.39	2940
4250	719	1.80	1595	792	2.37	2093	846	2.71	2386	903	3.10	2710	—	—	—

50TFQ009 (8 1/2 TONS) — STANDARD MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2550	836	1.83	1621	887	2.13	1884	931	2.45	2162	964	2.77	2436	986	3.11	2718
2660	839	1.87	1656	891	2.17	1919	936	2.49	2197	973	2.82	2479	999	3.16	2759
2700	846	1.95	1726	898	2.26	1997	946	2.58	2275	987	2.91	2554	1019	3.26	2839
2800	855	2.04	1805	906	2.35	2076	954	2.67	2352	997	3.01	2637	1034	3.36	2917
2900	863	2.13	1884	913	2.44	2154	961	2.77	2436	1006	3.12	2727	—	—	—
3000	872	2.22	1962	921	2.54	2240	969	2.88	2529	1014	3.22	2807	—	—	—
3100	882	2.33	2058	930	2.65	2335	976	2.99	2620	1021	3.34	2902	—	—	—
3200	892	2.45	2162	939	2.76	2428	984	3.10	2710	—	—	—	—	—	—
3300	902	2.57	2266	948	2.88	2529	993	3.21	2799	—	—	—	—	—	—
3400	912	2.69	2369	958	3.01	2637	1002	3.34	2902	—	—	—	—	—	—
3500	921	2.82	2479	968	3.15	2751	—	—	—	—	—	—	—	—	—
3600	930	2.95	2587	978	3.29	2862	—	—	—	—	—	—	—	—	—
3700	940	3.07	2686	—	—	—	—	—	—	—	—	—	—	—	—
3750	945	3.14	2743	—	—	—	—	—	—	—	—	—	—	—	—
3800	949	3.20	2781	—	—	—	—	—	—	—	—	—	—	—	—
3900	959	3.33	2894	—	—	—	—	—	—	—	—	—	—	—	—
4000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4200	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4250	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Motor drive range: 685 to 935 rpm. All other rpms require field-supplied drive.

Refer to page 65 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum usable watts input is 2120 and maximum continuous bhp is 2.40.

Performance data (cont)

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

50TFQ009 (8½ TONS) — HIGH-STATIC MOTOR (BELT DRIVE)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2550	**550**	**0.69**	**669**	**627**	**0.94**	**867**	**692**	**1.17**	**1056**	**754**	**1.45**	**1292**	**812**	**1.74**	**1543**
2660	**557**	**0.72**	**692**	**634**	**0.97**	**891**	**698**	**1.21**	**1089**	**759**	**1.49**	**1327**	**816**	**1.79**	**1587**
2700	**573**	**0.79**	**747**	**648**	**1.05**	**956**	**711**	**1.29**	**1156**	**770**	**1.58**	**1404**	**827**	**1.88**	**1665**
2800	**588**	**0.86**	**803**	**662**	**1.13**	**1022**	**723**	**1.38**	**1233**	**782**	**1.66**	**1473**	**837**	**1.98**	**1753**
2900	**604**	**0.94**	**867**	**676**	**1.21**	**1089**	**737**	**1.48**	**1318**	**794**	**1.76**	**1560**	**848**	**2.08**	**1840**
3000	**620**	**1.02**	**932**	**690**	**1.30**	**1165**	**750**	**1.58**	**1404**	**806**	**1.86**	**1648**	**849**	**2.18**	**1927**
3100	**636**	**1.11**	**1006**	**704**	**1.39**	**1241**	**764**	**1.69**	**1499**	**818**	**1.97**	**1744**	870	2.29	2023
3200	**652**	**1.21**	**1089**	**718**	**1.49**	**1327**	**778**	**1.80**	**1595**	**831**	**2.09**	**1849**	882	2.40	2119
3300	**668**	**1.31**	**1173**	**732**	**1.59**	**1413**	**793**	**1.92**	**1700**	**844**	**2.21**	**1954**	894	2.53	2232
3400	**684**	**1.41**	**1258**	**747**	**1.70**	**1508**	**807**	**2.04**	**1805**	**857**	**2.35**	**2076**	907	2.66	2343
3500	**701**	**1.53**	**1361**	**762**	**1.82**	**1613**	**821**	**2.16**	**1910**	871	2.48	2188	919	2.80	2462
3600	**717**	**1.65**	**1465**	**777**	**1.94**	**1718**	**835**	**2.29**	**2023**	885	2.63	2317	932	2.95	2587
3700	**733**	**1.77**	**1569**	**792**	**2.07**	**1831**	**849**	**2.42**	**2136**	899	2.78	2445	945	3.11	2718
3750	**742**	**1.84**	**1630**	**800**	**2.14**	**1892**	**856**	**2.49**	**2197**	907	2.86	2512	952	3.20	2719
3800	**750**	**1.90**	**1683**	**807**	**2.21**	**1954**	863	2.56	2257	914	2.93	2571	958	3.28	2854
3900	**767**	**2.04**	**1805**	**822**	**2.35**	**2076**	877	2.71	2386	928	3.09	2702	972	3.45	2987
4000	**783**	**2.18**	**1927**	**838**	**2.50**	**2206**	891	2.86	2512	942	3.26	2839	986	3.63	3121
4100	**800**	**2.34**	**2067**	**854**	**2.66**	**2343**	905	3.02	2645	956	3.43	2971	1000	3.81	3251
4200	**817**	**2.49**	**2197**	869	2.82	2479	920	3.19	2783	970	3.60	3099	1015	4.00	3380
4250	**826**	**2.58**	**2275**	877	2.91	2554	928	3.28	2854	977	3.69	3165	1022	4.10	3445

50TFQ009 (8½ TONS) — HIGH-STATIC MOTOR (BELT DRIVE)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
2550	864	1.99	1761	920	2.39	2110	974	2.76	2428	1005	3.04	2672	1034	3.31	2910
2660	868	2.04	1805	921	2.41	2136	976	2.78	2445	1008	3.06	2691	1037	3.33	2931
2700	878	2.16	1910	928	2.45	2162	983	2.88	2529	1015	3.17	2788	1044	3.45	3036
2800	889	2.29	2023	937	2.57	2266	986	2.91	2554	1018	3.20	2817	1047	3.49	3068
2900	900	2.41	2128	947	2.70	2377	993	3.01	2637	1025	3.31	2914	1055	3.61	3174
3000	910	2.52	2223	958	2.85	2504	1002	3.15	2751	1034	3.47	3049	1064	3.77	3321
3100	920	2.64	2326	968	2.99	2620	1012	3.30	2870	1045	3.63	3195	1075	3.95	3479
3200	931	2.76	2428	979	3.13	2735	1023	3.47	3002	1056	3.82	3359	1087	4.16	3659
3300	942	2.89	2537	989	3.26	2839	1034	3.63	3121	1067	3.99	3514	—	—	—
3400	954	3.02	2645	1000	3.40	2948	1044	3.79	3237	1078	4.17	3669	—	—	—
3500	966	3.15	2751	1011	3.55	3062	1054	3.94	3340	—	—	—	—	—	—
3600	978	3.30	2870	1022	3.69	3165	1065	4.10	3445	—	—	—	—	—	—
3700	990	3.45	2987	1034	3.84	3272	—	—	—	—	—	—	—	—	—
3750	997	3.54	3055	1040	3.93	3333	—	—	—	—	—	—	—	—	—
3800	1003	3.62	3114	1045	4.01	3387	—	—	—	—	—	—	—	—	—
3900	1015	3.80	3244	1057	4.18	3495	—	—	—	—	—	—	—	—	—
4000	1028	3.99	3373	—	—	—	—	—	—	—	—	—	—	—	—
4100	1042	4.18	3495	—	—	—	—	—	—	—	—	—	—	—	—
4200	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4250	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Motor drive range: 860 to 1080 rpm. All other rpms require field-supplied drive.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum continuous bhp is 3.7 and the maximum continuous watts are 3313.

Refer to page 65 for general Fan Performance notes.

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

50TFQ012 (10 TONS)*

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
3000	**484**	**0.55**	**562**	**560**	**0.70**	**677**	**631**	**0.87**	**810**	690	1.03	940	747	1.20	1081
3100	**495**	**0.61**	**607**	**570**	**0.76**	**723**	**638**	**0.92**	**851**	699	1.10	998	755	1.27	1140
3200	**505**	**0.66**	**646**	**579**	**0.81**	**763**	**646**	**0.98**	**899**	708	1.16	1047	761	1.34	1199
3300	**516**	**0.72**	**692**	**589**	**0.87**	**810**	**655**	**1.05**	**956**	717	1.23	1106	767	1.40	1250
3400	**527**	**0.78**	**739**	**599**	**0.93**	**859**	**664**	**1.11**	**1006**	724	1.30	1165	775	1.48	1318
3500	**537**	**0.85**	**795**	**609**	**0.99**	**907**	**672**	**1.18**	**1064**	731	1.36	1216	784	1.56	1387
3600	**548**	**0.92**	**851**	**619**	**1.05**	**956**	**680**	**1.24**	**1114**	738	1.43	1275	794	1.64	1456
3700	**560**	**1.00**	**916**	**629**	**1.12**	**1014**	688	1.31	1173	747	1.51	1344	802	1.73	1534
3800	**571**	**1.08**	**981**	**639**	**1.19**	**1072**	698	1.39	1241	756	1.60	1422	810	1.81	1604
3900	**582**	**1.16**	**1047**	**649**	**1.27**	**1140**	708	1.47	1310	764	1.69	1499	816	1.89	1674
4000	**593**	**1.25**	**1123**	**659**	**1.35**	**1207**	717	1.56	1387	773	1.78	1578	823	1.98	1753
4100	**605**	**1.35**	**1207**	**670**	**1.44**	**1284**	727	1.65	1465	781	1.86	1648	832	2.08	1840
4200	**616**	**1.45**	**1292**	**680**	**1.53**	**1361**	737	1.74	1543	789	1.95	1726	841	2.18	1927
4300	**628**	**1.56**	**1387**	690	1.63	1447	747	1.83	1621	798	2.05	1814	849	2.30	2032
4400	**639**	**1.67**	**1482**	701	1.73	1534	757	1.92	1700	807	2.16	1910	858	2.41	2177
4500	**651**	**1.78**	**1578**	712	1.84	1630	767	2.02	1788	817	2.27	2006	866	2.51	2265
4600	**662**	**1.91**	**1691**	722	1.95	1726	777	2.13	1884	827	2.38	2102	874	2.62	2362
4700	**674**	**2.03**	**1796**	733	2.07	1831	787	2.24	1980	836	2.50	2256	882	2.73	2460
4800	686	2.17	1919	744	2.20	1945	797	2.36	2084	846	2.62	2362	891	2.85	2569
4900	698	2.31	2041	755	2.33	2058	808	2.48	2238	856	2.73	2460	900	2.99	2698
5000	710	2.45	2212	766	2.47	2230	818	2.61	2353	866	2.86	2578	910	3.12	2819

50TFQ012 (10 TONS)* (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
3000	800	1.38	1233	850	1.52	1353	879	1.38	1233	925	1.81	1604	964	1.92	1761
3100	805	1.44	1284	857	1.63	1447	896	1.66	1473	935	1.93	1709	975	1.98	1811
3200	812	1.51	1344	862	1.71	1517	908	1.85	1639	944	2.01	1836	984	2.09	1903
3300	819	1.59	1413	867	1.78	1578	915	1.98	1753	952	2.11	1920	993	2.22	2014
3400	827	1.67	1482	873	1.85	1639	920	2.07	1831	963	2.21	2005	1001	2.31	2091
3500	833	1.75	1552	880	1.94	1718	926	2.15	1901	970	2.41	2134	1007	2.46	2221
3600	840	1.83	1621	888	2.04	1805	931	2.23	1971	976	2.47	2230	1017	2.62	2362
3700	847	1.92	1700	895	2.13	1884	938	2.33	2108	981	2.56	2309	1024	2.77	2496
3800	856	2.02	1788	901	2.23	1971	945	2.44	2203	986	2.65	2389	1029	2.89	2605
3900	865	2.12	1875	908	2.32	2050	953	2.55	2300	993	2.75	2478	1034	3.00	2707
4000	875	2.22	1962	915	2.42	2186	960	2.65	2389	1000	2.87	2587	1039	3.10	2800
4100	883	2.32	2050	924	2.54	2291	966	2.76	2487	1008	2.99	2698	1046	3.21	2904
4200	889	2.41	2177	934	2.65	2389	972	2.87	2587	1015	3.12	2819	1053	3.34	3029
4300	896	2.51	2265	943	2.77	2406	980	2.99	2698	1021	3.23	2923	1061	3.48	3166
4400	903	2.62	2362	951	2.89	2603	990	3.12	2819	1028	3.36	3049	1068	3.61	3241
4500	912	2.74	2469	958	3.00	2707	999	3.26	2982	1035	3.51	3161	1074	3.74	3346
4600	921	2.87	2587	965	3.11	2810	1008	3.39	3078	1041	3.68	3295	1081	3.90	3450
4700	930	3.00	2707	972	3.23	2923	1017	3.45	3224	1048	3.80	3436	1088	4.13	3552
4800	938	3.14	2838	980	3.37	3058	1025	3.55	3362	1055	3.85	3584	1095	4.30	3653
4900	946	3.27	2962	990	3.51	3149	1034	3.71	3505	1062	3.98	3741	1101	4.45	3753
5000	954	3.39	3078	998	3.62	3271	1042	3.85	3654	1068	4.08	3907	1108	4.59	3851

LEGEND

Bhp — Brake Horsepower Input to Fan
Watts — Input Watts to Motor

*Standard motor drive range: 685 to 935 rpm. Alternate motor drive range: 835 to 1085 rpm. High static motor drive range: 830 to 1130 rpm. All other rpms require field-supplied drive.

Refer to this page for general Fan Performance notes.

NOTES:
1. **Boldface** indicates field-supplied drive is required.
2. ▭ indicates high-static motor and drive are required.
3. Maximum usable watts input is 2120 with standard motor, 2615 with alternate motor, and 4400 for the high-static motor. Maximum continuous bhp is 2.40 with standard motor, 2.90 with alternate motor and 5.25 with high-static motor.

GENERAL NOTES FOR FAN PERFORMANCE TABLES

1. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. For additional information on motor performance, refer to Indoor-Fan Motor Performance table on page 69.
2. Values include losses for filters, unit casing, and wet coils. See page 66 for accessory/FIOP (factory-installed option) static pressure information.
3. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
4. Interpolation is permissible. Do not extrapolate. (Belt drive units only.)

Performance data (cont)

ACCESSORY/FIOP STATIC PRESSURE* (in. wg) — 50TFQ004-007

COMPONENT	CFM									
	900	1200	1400	1600	1800	2000	2200	2400	2600	3000
1 Heater Module	0.05	0.07	0.09	0.09	0.10	0.11	0.11	0.12	0.13	0.15
2 Heater Modules	0.15	0.16	0.16	0.16	0.17	0.17	0.17	0.18	0.18	0.19
Durablade Economizer	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
EconoMi$er	0.05	0.09	0.13	0.17	0.22	0.27	0.32	0.39	0.45	0.53

LEGEND

FIOP — Factory-Installed Option

*The static pressure must be added to external static pressure. The sum and the evaporator entering-air cfm should then be used in conjunction with the Fan Performance tables to determine blower rpm and watts.

ACCESSORY/FIOP STATIC PRESSURE* (in. wg) — 50TFQ008-012

COMPONENT	CFM									
	2250	2500	3000	3500	4000	4500	5000	5500	6000	6250
1 Heater Module	0.02	0.03	0.05	0.07	0.08	0.10	0.12	0.14	0.16	0.17
2 Heater Modules	0.03	0.05	0.07	0.09	0.12	0.14	0.16	0.19	0.21	0.20
Durablade Economizer	0.02	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.09
EconoMi$er	0.07	0.09	0.13	0.18	0.23	0.30	0.36	—	—	—

LEGEND

FIOP — Factory-Installed Option

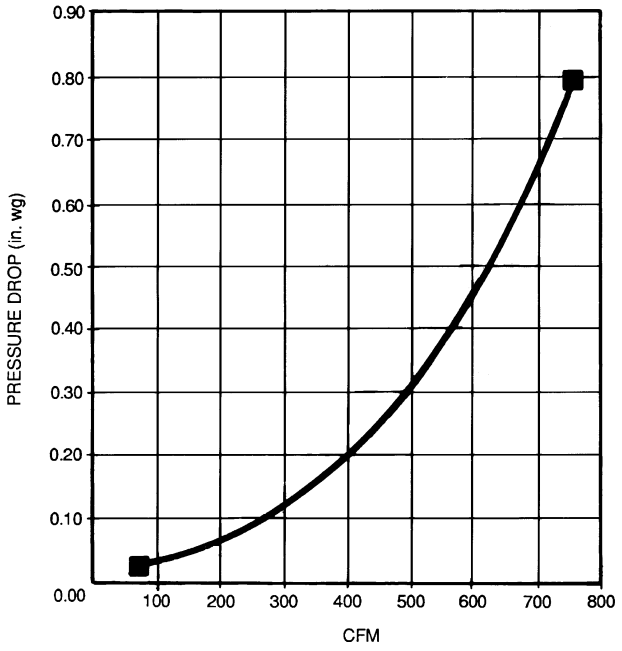
*The static pressure must be added to external static pressure. The sum and the evaporator entering-air cfm should then be used in conjunction with the Fan Performance tables to determine blower rpm and watts.

FAN RPM AT MOTOR PULLEY SETTINGS* — 50TFQ004-012

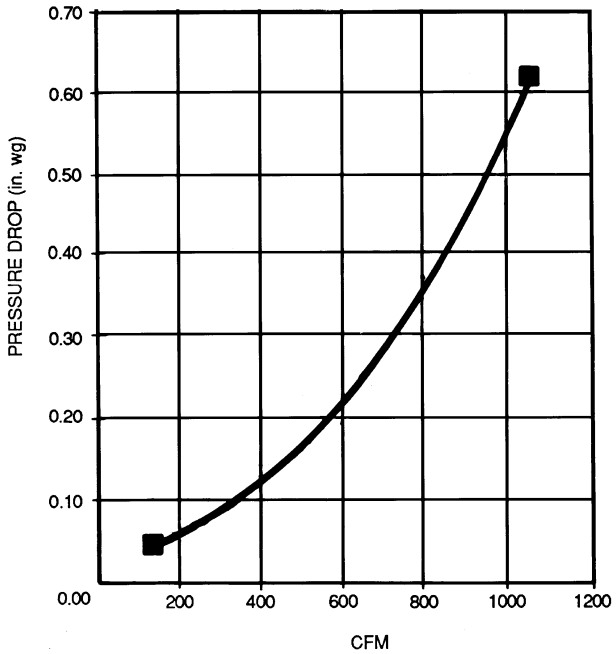
UNIT 50TFQ	MOTOR PULLEY TURNS OPEN												
	0	1/2	1	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6
004†	1000	976	952	928	904	880	856	832	808	784	760	—	—
004**	1455	1423	1392	1360	1328	1297	1265	1233	1202	1170	1138	1107	1075
005†	1185	1150	1115	1080	1045	1010	975	940	905	870	835	—	—
005**	1455	1423	1392	1360	1328	1297	1265	1233	1202	1170	1138	1107	1075
006†	1300	1260	1220	1180	1140	1100	1060	1020	980	940	900	—	—
006**	1685	1589	1557	1525	1493	1460	1428	1396	1364	1332	1300	—	—
007††	1460	1420	1380	1345	1305	1265	1225	1185	1150	1110	1070	—	—
007**	1685	1589	1557	1525	1493	1460	1428	1396	1364	1332	1300	—	—
008††	840	815	790	765	740	715	690	665	635	615	590	—	—
008***	935	910	885	860	835	810	785	760	735	710	685	—	—
008**	1080	1025	1007	988	970	952	933	915	897	878	860	—	—
009††	935	910	885	860	835	810	785	760	735	710	685	—	—
009**	1080	1025	1007	988	970	952	933	915	897	878	860	—	—
012††	935	910	885	860	835	810	785	760	735	710	685	—	—
012†	1085	1060	1035	1010	985	960	935	910	885	860	835	—	—
012**	1130	1112	1087	1062	1037	1012	987	962	937	912	887	862	830

*Approximate fan rpm shown.
†Indicates alternate motor and drive package.
**Indicates high-static motor and drive package.
††Indicates standard motor and drive package.
***Indicates alternate drive package only.

DURABLADE ECONOMIZER BAROMETRIC RELIEF DAMPER CHARACTERISTICS — 50TFQ004-007



DURABLADE ECONOMIZER BAROMETRIC RELIEF DAMPER CHARACTERISTICS — 50TFQ008-012

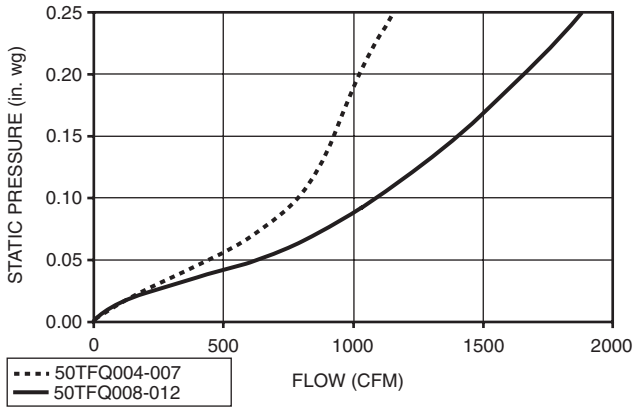


OPTIONAL POWER EXHAUST
POWER REQUIREMENTS

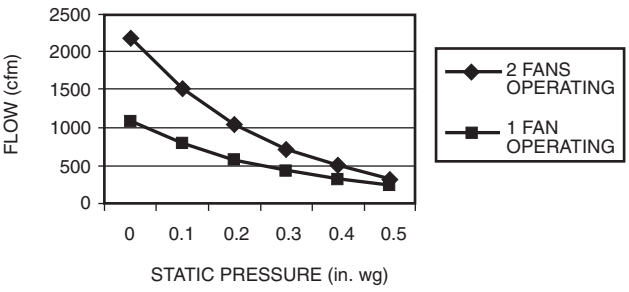
UNIT SIZE	AMPS @ 230 V (2 Fans Running)	MOCP		
		230 VAC	460 VAC	575 VAC
50TFQ004-007	1.40 Amps @ 60 Hz	15.0 amps	15.0 amps	15.0 amps
50TFQ008-014	3.04 Amps @ 60 Hz			

MOCP — Maximum Overcurrent Protection

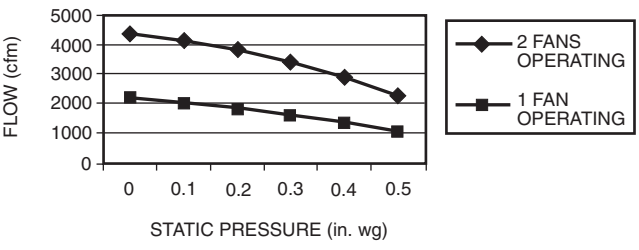
ECONOMI$ER BAROMETRIC RELIEF DAMPER CHARACTERISTICS



ECONOMI$ER POWER EXHAUST PERFORMANCE (50TFQ004-007)



ECONOMI$ER POWER EXHAUST PERFORMANCE (50TFQ008-012)



Performance data (cont)

ELECTRIC HEATING CAPACITIES

UNIT 50TFQ	VOLTAGE (60 Hz)	ACCESSORY kW
004	208/230 (single phase)	4.4 6.5 8.7 10.5 13.0*
	208/230 (3 phase)	4.4 6.5 8.7 10.5 16.0
	460 (3 phase)	6.0 8.8 11.5 14.0
005	208/230 (single phase)	4.4 8.7 13.0* 17.4* 21.0*
	208/230 (3 phase)	6.5 8.7 16.0 21.0*
	460 (3 phase)	6.0 11.5 14.0 23.0*
006	208/230 (single phase)	6.5 8.7 13.0* 17.4* 21.0*
	208/230 (3 phase)	6.5 10.5 16.0 21.0* 26.5*
	460 (3 phase)	6.0 11.5 14.0 23.0* 25.5*
007	208/230 (3 phase)	6.5 10.5 16.0 21.0* 26.5*
	460 (3 phase)	6.0 11.5 14.0 23.0* 25.5*
008,009	208/230 (3 phase)	10.5 16.0 24.8 32.0* 42.4*
	460 (3 phase)	14.0 16.5 27.8 33.0 41.7*
	575 (3 phase)	17.0 34.0
012	208/230 (3 phase)	10.4 16.0 32.0 42.4* 50.0*
	460 (3 phase)	16.5 27.8 33.0 41.7* 50.0*
	575 (3 phase)	17.0 34.0 51.0*

*Two heater packages required to provide kW indicated.

NOTES:
1. The kW ratings shown above are at 240, 480, and 575 v. Use the Multiplication Factors table below to determine heater capacity for your particular voltage.
2. Heaters are not available for size 004-007, 575-v units.

MULTIPLICATION FACTORS

HEATER RATING VOLTAGE	VOLTAGE DISTRIBUTION V-3-60	MULTIPLICATION FACTOR
240	200 208 230 240	0.69 0.75 0.92 1.00
480	440 460 480	0.84 0.92 1.00
575	545 575 600	0.90 1.00 1.09

EXAMPLE: 32.0 kW (at 240 v) heater on 208 v
= 32.0 (.75 mult factor)
= 24.0 kW capacity at 208 v.

INDOOR-FAN MOTOR PERFORMANCE — 50TFQ UNITS

UNIT 50TFQ	INDOOR-FAN MOTOR	UNIT VOLTAGE	MAXIMUM ACCEPTABLE CONTINUOUS BHP*	MAXIMUM ACCEPTABLE OPERATING WATTS	MAXIMUM AMP DRAW	MOTOR EFFICIENCY (%)
004	Standard	208/230	0.34	440	3.3	75
		460			1.8	
		575			1.8	
	Alternate	208/230	1.00	1000	5.1	
		460			2.2	
		575			2.2	
	High Static	208/230	2.40	2120	6.1	
		460			2.7	
		575			2.7	
005	Standard	208/230	0.75	850	3.1	75
		460			1.9	
		575			1.9	
	Alternate	208/230	1.00	1000	5.1	
		460			2.2	
		575			2.2	
	High Static	208/230	2.40	2120	6.1	
		460			2.7	
		575			2.7	
006	Standard	208/230	1.20	1340	6.2	74
		460			3.4	
		575			3.4	
	Alternate	208/230	1.30/2.40†	2120	9.2/6.1†	
		460			2.7	
		575			2.7	
	High Static	208/230	2.90	2562	6.1	
		460			2.7	
		575			2.7	
007	Standard	208/230	2.40	2120	6.1	84
		460			2.7	
		575			2.7	
	High Static	208/230	2.90	2562	7.9	
		460			3.6	
		575			3.6	
008	Standard, Alternate	208/230	2.40	2120	6.1	80
		460			2.7	
		575			2.7	
	High Static	208/230	3.70	3313	11.1	
		460			5.0	
		575			5.0	
009	Standard	208/230	2.40	2120	6.1	80
		460			2.7	
		575			2.7	
	High Static	208/230	3.70	3313	11.1	
		460			5.0	
		575			5.0	
012	Standard	208/230	2.40	2120	6.1	80
		460			2.7	
		575			2.7	
	Alternate	208/230	2.90	2615	7.9	
		460			3.6	
		575			3.6	
	High Static	208/230	5.25	4400	15.0	
		460			7.4	
		575			7.4	

LEGEND

BHP — Brake Horsepower

*Extensive motor and electrical testing on these units ensures that the full horsepower range of the motors can be utilized with confidence. Using your fan motors up to the horsepower ratings shown in this table will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.

†Single-phase/three-phase.

NOTES:

1. All indoor-fan motors 5 hp and larger meet the minimum efficiency requirements as established by the Energy Policy Act of 1992 (EPACT) effective October 24, 1997.
2. High-static motor not available on single-phase units.

Electrical data

UNITS WITHOUT ELECTRICAL CONVENIENCE OUTLET

UNIT 50TFQ	NOMINAL V-PH-Hz	IFM TYPE	VOLTAGE RANGE		COMPRESSOR (each)		OFM FLA	IFM FLA	ELECTRIC HEAT*		POWER SUPPLY		DISCONNECT SIZE†	
			Min	Max	RLA	LRA			Nominal kW**	FLA	MCA	MOCP	FLA	LRA
004 (3 Tons)	208/230-1-60	STD	187	254	16.4	96.0	1.5	3.1	—	—	25.5/ 25.5	30/ 30††	25/ 25	107/107
									3.3/ 4.4	15.9/18.3	45.4/ 48.4	50/ 50††	43/ 46	123/125
									4.9/ 6.5	23.6/27.1	55.0/ 59.4	60/ 60††	52/ 56	131/184
									6.5/ 8.7	31.3/36.3	64.6/ 70.9	70/ 80	61/ 66	138/143
									7.9/10.5	38.0/43.8	73.0/ 80.3	80/ 90	68/ 75	145/151
									9.8/13.0	47.1/54.2	84.4/ 93.3	90/100	79/ 87	154/161***
		ALT	187	254	16.4	96.0	1.5	4.9	—	—	26.9/ 26.9	30/ 30††	26/ 26	111/111
									3.3/ 4.4	15.9/18.3	46.8/ 49.8	50/ 50††	45/ 47	127/130
									4.9/ 6.5	23.6/27.1	56.4/ 60.8	60/ 70	53/ 57	135/138
									6.5/ 8.7	31.3/36.3	66.0/ 72.3	70/ 80	62/ 68	143/148
									7.9/10.5	38.0/43.8	74.4/ 81.7	80/ 90	70/ 77	149/155
									9.8/13.0	47.1/54.2	85.8/ 94.7	90/100	80/ 89	158/166***
	208/230-3-60	STD	187	254	10.2	75.0	1.5	3.1	—	—	17.8/ 17.8	20/ 20††	17/ 17	86/ 86
									3.3/ 4.4	9.2/10.6	29.3/ 31.0	30/ 35††	28/ 30	95/ 97
									4.9/ 6.5	13.6/15.6	34.8/ 37.3	35/ 40††	33/ 35	100/102
									6.5/ 8.7	18.0/20.9	40.3/ 43.9	45/ 45††	38/ 42	104/107
									7.9/10.5	21.9/25.3	45.1/ 49.4	50/ 50††	43/ 47	108/111
									12.0/16.0	33.3/38.5	59.4/ 65.9	60/ 70	56/ 62	119/124
		ALT	187	254	10.2	75.0	1.5	4.9	—	—	19.2/ 19.2	20/ 20††	19/ 19	90/ 90
									3.3/ 4.4	9.2/10.6	30.7/ 32.4	35/ 35††	30/ 31	100/101
									4.9/ 6.5	13.6/15.6	36.2/ 38.7	40/ 40††	35/ 37	104/106
									6.5/ 8.7	18.0/20.9	41.7/ 45.3	45/ 50††	40/ 43	108/111
									7.9/10.5	21.9/25.3	46.5/ 50.8	50/ 60††	44/ 48	112/116
									12.0/16.0	33.3/38.5	60.8/ 67.3	70/ 70	57/ 63	124/129
		HIGH-STATIC	187	254	10.2	75.0	1.5	5.8	—	—	20.1/ 20.1	25/ 25††	20/ 20	120/120
									3.3/ 4.4	9.2/10.6	31.6/ 33.3	35/ 35††	31/ 32	129/130
									4.9/ 6.5	13.6/15.6	37.1/ 39.6	40/ 40††	36/ 38	133/135
									6.5/ 8.7	18.0/20.9	42.6/ 46.2	45/ 50††	41/ 44	138/141
									7.9/10.5	21.9/25.3	47.4/ 51.7	50/ 60††	45/ 49	142/145
									12.0/16.0	33.3/38.5	61.7/ 68.2	70/ 70	58/ 64	153/158
	460-3-60	STD	414	508	4.8	40.0	0.8	1.7	—	—	8.1	15††	8	45
									6.0	7.2	12.1	20††	16	52
									8.8	10.6	21.4	25††	20	55
									11.5	13.8	25.4	30††	24	59
									14.0	16.8	29.1	30††	27	62
		ALT	414	508	4.8	40.0	0.8	2.1	—	—	8.9	15††	9	48
									6.0	7.2	17.9	20††	17	55
									8.8	10.6	22.2	25††	21	59
									11.5	13.8	26.2	30††	25	62
									14.0	16.8	29.9	30††	28	65
		HIGH-STATIC	414	508	4.8	40.0	0.8	2.6	—	—	9.4	15††	9	62
									6.0	7.2	18.4	20††	18	70
									8.8	10.6	22.7	25††	22	73
									11.5	13.8	26.7	30††	25	76
									14.0	16.8	30.4	35††	29	79
	575-3-60	STD	518	632	3.8	31.0	0.8	1.7	—	—	6.4	15††	6	35
		ALT	518	632	3.8	31.0	0.8	2.1	—	—	7.1	15††	7	37
		HIGH-STATIC	518	632	3.8	31.0	0.8	2.6	—	—	7.5	15††	7	49
005 (4 Tons)	208/230-1-60	STD	187	254	29.1	132.0	1.5	3.5	—	—	41.4/ 41.4	45/ 45††	39/ 39	143/143
									3.3/ 4.4	15.9/18.3	61.3/ 64.3	70/ 70	58/ 60	159/161
									6.5/ 8.7	31.3/36.3	80.5/ 86.8	90/ 90	75/ 81	174/179
									9.8/13.0	47.1/54.2	100.3/109.1	110/110	93/102	190/197
									13.1/17.4	63.0/72.5	120.1/132.0	125/150	112/123	206/215
									15.8/21.0	76.0/87.5	136.4/150.8	150/175	127/140	219/230
		ALT	187	254	29.1	132.0	1.5	4.9	—	—	42.8/ 42.8	45/ 45††	41/ 41	147/147
									3.3/ 4.4	15.9/18.3	62.7/ 65.7	70/ 70	59/ 62	163/166
									6.5/ 8.7	31.3/36.3	81.9/ 88.2	90/ 90	77/ 83	179/184
									9.8/13.0	47.1/54.2	107.7/110.5	110/125	95/103	194/202
									13.1/17.4	63.0/72.5	121.5/133.4	125/150	113/124	210/220
									15.8/21.0	76.0/87.5	137.8/152.2	150/175	128/141	223/235
	208/230-3-60	STD	187	254	16.8	91.0	1.5	3.5	—	—	26.0/ 26.0	30/ 30††	25/ 25	102/102
									4.9/ 6.5	13.6/15.6	43.0/ 45.5	45/ 50††	41/ 43	115/117
									6.5/ 8.7	18.0/20.9	48.5/ 52.1	50/ 60††	46/ 49	120/123
									12.0/16.0	33.3/38.5	67.6/ 74.1	70/ 80	63/ 69	135/140
									15.8/21.0	43.9/50.5	80.9/ 89.1	90/ 90	76/ 83	146/152
		ALT	187	254	16.8	91.0	1.5	4.9	—	—	27.4/ 27.4	30/ 30††	27/ 27	106/106
									4.9/ 6.5	13.6/15.6	44.4/ 46.9	45/ 50††	42/ 45	120/122
									6.5/ 8.7	18.0/20.9	49.9/ 53.5	50/ 60††	47/ 45	124/127
									12.0/16.0	33.3/38.5	69.0/ 75.5	70/ 80	65/ 71	140/145
									15.8/21.0	43.9/50.5	82.3/ 90.5	90/100	77/ 85	150/157
		HIGH-STATIC	187	254	16.8	91.0	1.5	5.8	—	—	28.3/ 28.3	30/ 30††	28/ 28	136/136
									4.9/ 6.5	13.6/15.6	45.3/ 47.8	50/ 60††	43/ 46	149/151
									6.5/ 8.7	18.0/20.9	50.8/ 54.4	60/ 60††	48/ 52	154/157
									12.0/16.0	33.3/38.5	69.9/ 76.4	70/ 80	66/ 72	169/174
									15.8/21.0	43.9/50.5	83.2/ 91.4	90/100	78/ 86	180/186***

NOTE: Legend and Notes for Electrical Data are on page 78.

UNITS WITHOUT ELECTRICAL CONVENIENCE OUTLET (cont)

UNIT 50TFQ	NOMINAL V-PH-Hz	IFM TYPE	VOLTAGE RANGE		COMPRESSOR (each)		OFM FLA	IFM FLA	ELECTRIC HEAT*		POWER SUPPLY		DISCONNECT SIZE†	
			Min	Max	RLA	LRA			Nominal kW**	FLA	MCA	MOCP	FLA	LRA
005 (4 Tons) (cont)	460-3-60	STD	414	508	8.4	50.0	0.8	1.8	—	—	13.1	15††	13	56
									6.0	7.2	22.1	25††	21	63
									11.5	13.8	30.4	35††	29	70
									14.0	16.8	34.1	35††	32	73
									23.0	27.7	47.7	50††	45	84
		ALT	414	508	8.4	50.0	0.8	2.1	—	—	13.4	15††	13	58
									6.0	7.2	22.4	25††	21	65
									11.5	13.8	30.7	35††	29	72
									14.0	16.8	34.4	35††	32	75
									23.0	27.7	48.0	50††	45	86
		HIGH-STATIC	414	508	8.4	50.0	0.8	2.6	—	—	13.9	15††	14	72
									6.0	7.2	22.9	25††	22	80
									11.5	13.8	31.2	35††	29	86
									14.0	16.8	34.9	35††	33	89
									23.0	27.7	48.5	50††	45	100
	575-3-60	STD	518	632	6.7	37.0	0.8	1.8	—	—	10.7	15††	10	42
		ALT	518	632	6.7	37.0	0.8	2.1	—	—	10.7	15††	10	43
		HIGH-STATIC	518	632	6.7	37.0	0.8	2.6	—	—	11.1	15††	11	55
006 (5 Tons)	208/230-1-60	STD	187	254	26.7	170.0	1.5	5.9	—	—	40.8/ 40.8	45/ 45††	39/ 39	184/184
									4.9/ 6.5	23.6/27.0	70.3/ 74.7	80/ 80	66/ 70	208/211
									6.5/ 8.7	31.3/36.3	79.9/ 86.2	80/ 90	75/ 81	215/220***
									9.8/13.0	47.1/54.2	99.7/108.5	100/110	93/102	231/238***
									13.1/17.4	63.0/72.5	119.5/131.4	125/150	112/123	247/257***
									15.8/21.0	76.0/87.5	135.8/150.2	150/175	127/140	260/272***
		ALT	187	254	26.7	170.0	1.5	8.8	—	—	48.5/ 48.5	50/ 50††	48/ 48	222/222
									4.9/ 6.5	23.6/27.1	78.0/ 82.4	80/ 90	75/ 79	246/249
									6.5/ 8.7	31.3/36.3	87.6/ 93.9	90/100	84/ 90	253/258***
									9.8/13.0	47.1/54.2	107.4/116.2	110/125	102/110	269/276***
									13.1/17.4	63.0/72.5	127.2/139.1	150/150	121/131	285/294***
									15.8/21.0	76.0/87.5	143.5/157.9	150/175	135/149	298/309***
	208/230-3-60	STD	187	254	15.4	124.0	1.5	5.9	—	—	26.7/ 26.7	30/ 30††	26/ 26	138/138
									4.9/ 6.5	13.6/15.6	43.7/ 46.2	45/ 50††	42/ 44	152/154
									7.9/10.5	21.9/25.3	54.0/ 58.3	60/ 60††	51/ 55	160/163
									12.0/16.0	33.3/38.5	68.3/ 74.8	70/ 80	65/ 70	171/177
									15.8/21.0	43.9/50.5	81.5/ 89.8	90/ 90	77/ 84	182/189***
									19.9/26.5	55.2/63.8	95.7/106.4	100/110	90/100	193/202***
		ALT	187	254	15.4	124.0	1.5	5.8	—	—	26.6/ 26.6	30/ 30††	26/ 26	169/169
									4.9/ 6.5	13.6/15.6	43.6/ 46.1	45/ 50††	42/ 44	182/184
									7.9/10.5	21.9/25.3	53.9/ 58.2	60/ 60	51/ 55	191/194
									12.0/16.0	33.3/38.5	68.2/ 74.7	70/ 80	64/ 70	202/207
									15.8/21.0	43.9/50.5	81.4/ 89.7	90/ 90	77/ 84	213/219***
									19.9/26.5	55.2/63.8	95.6/106.3	100/110	90/ 99	224/233***
		HIGH-STATIC	187	254	15.4	124.0	1.5	7.5	—	—	28.3/ 28.3	30/ 30††	28/ 28	188/188
									4.9/ 6.5	13.6/15.6	45.3/ 47.8	50/ 50††	44/ 46	201/203
									7.9/10.5	21.9/25.3	55.6/ 59.9	60/ 60††	53/ 57	210/213
									12.0/16.0	33.3/38.5	69.9/ 76.4	70/ 80	66/ 72	221/226
									15.8/21.0	43.9/50.5	83.1/ 91.4	90/100	79/ 86	232/238***
									19.9/26.5	55.2/63.8	97.3/108.0	100/110	92/101	243/252***
	460-3-60	STD	414	508	7.7	59.6	0.8	3.2	—	—	13.6	15††	13	67
									6.0	7.2	22.6	25††	22	75
									11.5	13.8	30.9	35††	29	81
									14.0	16.8	34.6	35††	33	84
									23.0	27.7	48.3	50††	45	95
									25.5	30.7	52.0	60††	49	98
		ALT	414	508	7.7	59.6	0.8	2.6	—	—	13.0	15††	13	82
									6.0	7.2	22.0	25††	21	89
									11.5	13.8	30.3	35††	29	96
									14.0	16.8	34.0	35††	32	99
									23.0	27.7	47.7	50††	45	110
									25.5	30.7	51.4	60††	48	113
		HIGH-STATIC	414	508	7.7	59.6	0.8	3.4	—	—	13.8	15††	14	92
									6.0	7.2	22.8	25††	22	99
									11.5	13.8	31.1	35††	30	105
									14.0	16.8	34.8	35††	33	108
									23.0	27.7	48.5	50††	46	119
									25.5	30.7	52.2	60††	49	122
	575-3-60	STD	518	632	6.2	49.4	0.8	3.2	—	—	11.0	15††	11	56
		ALT	518	632	6.2	49.4	0.8	2.6	—	—	10.5	15††	10	67
		HIGH-STATIC	518	632	6.2	49.4	0.8	3.4	—	—	11.1	15††	11	75

NOTE: Legend and Notes for Electrical Data are on page 78.

Electrical data (cont)

UNITS WITHOUT ELECTRICAL CONVENIENCE OUTLET (cont)

UNIT 50TFQ	NOMINAL V-PH-Hz	IFM TYPE	VOLTAGE RANGE		COMPRESSOR (each)		OFM FLA	IFM FLA	ELECTRIC HEAT*		POWER SUPPLY		DISCONNECT SIZE†	
			Min	Max	RLA	LRA			Nominal kW**	FLA	MCA	MOCP	FLA	LRA
007 (6 Tons)	208/230-3-60	STD	187	254	22.7	146.0	1.4	5.8	—	—	35.6/ 35.6	40/ 40††	34/ 34	190/190
									4.9/ 6.5	13.6/15.6	52.6/ 55.1	60/ 60††	50/ 52	204/206
									7.9/10.5	21.9/25.3	63.0/ 67.2	70/ 70	60/ 63	212/215
									12.0/16.0	33.3/38.5	77.2/ 83.7	80/ 90	73/ 79	223/229
									15.8/21.0	43.9/50.5	90.5/ 98.7	100/100	85/ 92	234/241***
									19.9/26.5	55.2/63.8	104.6/115.3	110/125	98/108	245/254***
		HIGH-STATIC	187	254	22.7	146.0	1.4	7.5	—	—	37.3/ 37.3	40/ 40††	36/ 36	209/209
									4.9/ 6.5	13.6/15.6	54.3/ 56.8	60/ 60††	52/ 54	223/225
									7.9/10.5	21.9/25.3	64.7/ 68.9	70/ 70	62/ 65	231/234
									12.0/16.0	33.3/38.5	78.9/ 85.4	80/ 90	75/ 81	242/248***
									15.8/21.0	43.9/50.5	92.2/100.4	100/110	87/ 94	253/260***
									19.9/26.5	55.2/63.8	106.3/117.0	110/125	100/110	264/273***
	460-3-60	STD	414	508	11.4	73.0	0.7	2.6	—	—	17.6	20††	17	95
									6.0	7.2	26.6	30††	25	102
									11.5	13.8	34.8	35††	33	109
									14.0	16.8	38.6	40††	36	112
									23.0	27.7	52.2	60††	49	123
									25.5	30.7	55.9	60††	52	126
		HIGH-STATIC	414	508	11.4	73.0	0.7	3.4	—	—	18.4	20††	18	105
									6.0	7.2	27.4	30††	26	112
									11.5	13.8	35.6	40††	34	118
									14.0	16.8	39.4	40††	37	121
									23.0	27.7	53.0	60††	50	132
									25.5	30.7	56.7	60††	53	135
	575-3-60	STD	518	632	9.1	58.4	0.7	2.6	—	—	14.0	15††	14	76
		HIGH-STATIC	518	632	9.1	58.4	0.7	3.4	—	—	14.7	15††	14	84
008 ($7^1/_2$ Tons)	208/230-3-60	STD	187	254	13.4	91.0	1.4	5.8	—	—	38.8/ 38.8	40/ 40††	41/ 41	229/229
									7.8/10.5	21.7/ 25.0	65.9/ 70.0	70/ 80	66/ 69	251/254
									12.0/16.0	33.3/ 38.5	80.4/ 86.9	90/ 90	79/ 85	262/268***
									18.6/24.8	51.6/ 59.7	103.3/113.4	110/125	100/109	281/289***
									24.0/32.0	66.6/ 77.0	122.0/135.0	125/150	117/129	296/306***
									31.8/42.4	88.3/102.0	149.1/166.3	150/175	142/158	317/331***
		HIGH-STATIC	187	254	13.4	91.0	1.4	10.6	—	—	43.6/ 43.6	45/ 45††	46/ 46	273/273
									7.8/10.5	21.7/ 25.0	70.7/ 74.8	80/ 80	71/ 75	294/298
									12.0/16.0	33.3/ 38.5	85.2/ 91.7	90/100	85/ 91	306/311***
									18.6/24.8	51.6/ 59.7	108.1/118.2	110/125	106/115	324/332***
									24.0/32.0	66.6/ 77.0	126.8/139.8	150/150	123/135	339/350***
									31.8/42.4	88.3/102.0	153.9/171.1	175/175	148/164	361/375***
	460-3-60	STD	414	508	6.7	42.0	0.7	2.6	—	—	19.1	20††	20	108
									14.0	16.7	40.0	45††	39	124
									16.5	19.8	43.8	45††	43	128
									27.8	33.4	60.8	70	58	141
									33.0	39.7	68.7	70	66	147
									41.7	50.2	81.8	90	78	158
		HIGH-STATIC	414	508	6.7	42.0	0.7	4.8	—	—	21.3	25††	23	130
									14.0	16.7	42.2	45††	42	146
									16.5	19.8	46.0	50††	45	149
									27.8	33.4	63.0	70	61	163
									33.0	39.7	70.9	80	68	169
									41.7	50.2	84.0	90	80	180***
	575-3-60	STD	518	632	5.4	39.0	0.7	2.6	—	—	15.4	20††	16	97
									17.0	17.1	36.7	40††	36	114
									34.0	34.1	68.0	60††	55	131
		HIGH-STATIC						4.8	—	—	17.1	20††	18	114
									17.0	17.1	38.5	40††	38	132
									34.0	34.1	59.7	60††	57	149

NOTE: Legend and Notes for Electrical Data are on page 78.

UNITS WITHOUT ELECTRICAL CONVENIENCE OUTLET (cont)

UNIT 50TFQ	NOMINAL V-PH-Hz	IFM TYPE	VOLTAGE RANGE		COMPRESSOR (each)		OFM FLA	IFM FLA	ELECTRIC HEAT*		POWER SUPPLY		DISCONNECT SIZE†	
			Min	Max	RLA	LRA			Nominal kW**	FLA	MCA	MOCP	FLA	LRA
009 (8½ Tons)	208/230-3-60	STD	187	254	16.0	137.0	1.4	5.8	—	—	44.6/ 44.6	45/ 45††	47/ 47	321/321
									7.8/10.5	21.7/ 25.0	71.7/ 75.9	80/ 80	72/ 75	343/346
									12.0/16.0	33.3/ 38.5	86.2/ 92.7	90/100	85/ 91	354/360***
									18.6/24.8	51.6/ 59.7	109.1/119.2	110/125	106/115	373/381***
									24.0/32.0	66.6/ 77.0	127.9/140.9	150/150	123/135	388/398***
									31.8/42.4	88.3/102.0	155.0/172.1	175/175	148/164	409/428***
		HIGH-STATIC	187	254	16.0	137.0	1.4	10.6	—	—	49.4/ 49.4	50/ 50††	52/ 52	365/365
									7.8/10.5	21.7/ 25.0	76.5/ 80.7	80/ 90	77/ 81	386/390***
									12.0/16.0	33.3/ 38.5	91.0/ 97.5	100/100	91/ 96	398/403***
									18.6/24.8	51.6/ 59.7	113.9/124.0	125/125	112/121	416/424***
									24.0/32.0	66.6/ 77.0	132.7/145.7	150/150	129/141	431/442***
									31.8/42.4	88.3/102.0	159.8/176.9	175/200	154/170	453/467***
	460-3-60	STD	414	508	8.3	69.0	0.7	2.6	—	—	22.7	25††	24	162
									14.0	16.7	43.6	45††	43	178
									16.5	19.8	47.4	50††	46	182
									27.8	33.4	64.4	70	62	195
									33.0	39.7	72.3	80	69	201
									41.7	50.2	85.4	90	81	212***
		HIGH-STATIC	414	508	8.3	69.0	0.7	4.8	—	—	24.9	25††	26	184
									14.0	16.7	45.8	50††	45	200
									16.5	19.8	49.6	50††	49	203
									27.8	33.4	66.6	70	65	217
									33.0	39.7	74.5	80	72	223
									41.7	50.2	87.6	90	84	234***
	575-3-60	STD	518	632	6.4	58.0	0.7	2.6	—	—	17.6	20††	18	135
									17.0	17.1	59.0	40††	38	152
									34.0	34.1	60.2	70††	58	169
		HIGH-STATIC						4.8	—	—	19.4	20††	20	152
									17.0	17.1	40.7	45††	40	170
									34.0	34.1	62.0	70	60	187
012 (10 Tons)	208/230-3-60	STD	187	254	17.2	124.0	1.4	5.8	—	—	47.3/ 47.3	50/ 50††	49/ 49	295/295
									7.8/10.4	21.7/ 25.0	74.4/ 78.6	80/ 80	74/ 78	317/320
									12.0/16.0	33.3/ 38.5	88.9/ 95.4	90/100	88/ 94	328/334***
									24.0/32.0	66.6/ 77.0	130.6/143.6	150/150	126/138	362/372***
									31.8/42.4	88.3/102.0	157.7/174.8	175/175	151/167	383/397***
									37.6/50.0	104.4/120.3	177.8/167.6	200/175	170/188	399/415***
		ALT	187	254	17.2	124.0	1.4	7.5	—	—	49.0/ 49.0	50/ 50††	51/ 51	314/314
									7.8/10.4	21.7/ 25.0	76.1/ 80.8	80/ 90	76/ 80	336/389***
									12.0/16.0	33.3/ 38.5	90.6/ 97.1	100/100	90/ 96	347/353***
									24.0/32.0	66.6/ 77.0	132.3/145.3	150/150	128/140	381/391***
									31.8/42.4	88.3/102.0	159.4/176.5	175/200	153/169	402/416***
									37.6/50.0	104.4/120.3	179.5/169.3	200/175	171/190	418/434***
		HIGH-STATIC	187	254	17.2	124.0	1.4	15.0	—	—	56.5/ 56.5	60/ 60††	60/ 60	362/362
									7.8/10.4	21.7/ 25.0	83.6/ 87.8	90/ 90	85/ 89	384/387***
									12.0/16.0	33.3/ 38.5	98.1/104.6	100/110	98/104	395/401***
									24.0/32.0	66.6/ 77.0	139.8/152.8	150/175	137/149	429/439***
									31.8/42.4	88.3/102.0	166.9/184.0	175/200	162/177	450/464***
									37.6/50.0	104.4/120.3	187.0/176.8	200/200	180/198	466/482***
	460-3-60	STD	414	508	8.6	59.6	0.7	2.6	—	—	23.4	25††	24	143
									16.5	19.8	48.1	50††	47	163
									27.8	33.4	65.1	70	63	176
									33.0	39.7	73.0	80	70	183
									41.7	50.2	86.1	90	82	193***
									50.0	60.1	83.5	90	93	203***
		ALT	414	508	8.6	59.6	0.7	3.4	—	—	24.2	25††	25	182
									16.5	19.8	48.9	50††	48	202
									27.8	33.4	65.9	70	64	216
									33.0	39.7	73.8	80	71	222
									41.7	50.2	86.9	90	83	233***
									50.0	60.1	84.3	90	94	243***
		HIGH-STATIC	414	508	8.6	59.6	0.7	7.4	—	—	28.2	30††	30	176
									16.5	19.8	52.9	60††	53	196
									27.8	33.4	69.9	70	68	210
									33.0	39.7	77.8	80	76	216
									41.7	50.2	90.9	100	88	227***
									50.0	60.1	88.3	100	99	237***
	575-3-60	STD	518	632	6.9	49.4	0.7	2.6	—	—	18.7	20††	20	118
									17.0	17.1	40.1	50††	39	135
									34.0	34.1	61.4	70	59	152
									51.0	51.2	69.9	70	78	169
		ALT	518	632	6.9	49.4	0.7	3.4	—	—	19.4	20††	20	149
									17.0	17.1	40.7	50††	40	166
									34.0	34.1	62.0	70	60	183
									51.0	51.2	70.6	80	79	201***
		HIGH-STATIC	518	632	6.9	49.4	0.7	7.4	—	—	22.6	25††	24	145
									17.0	17.1	43.9	45††	44	162
									34.0	34.1	65.2	70	63	179
									51.0	51.2	73.8	80	83	196***

NOTE: Legend and Notes for Electrical Data are on page 78.

Electrical data (cont)

UNITS WITH ELECTRICAL CONVENIENCE OUTLET

UNIT 50TFQ	NOMINAL V-PH-Hz	IFM TYPE	VOLTAGE RANGE		COMPRESSOR (each)		OFM FLA	IFM FLA	ELECTRIC HEAT*		POWER SUPPLY		DISCONNECT SIZE†	
			Min	Max	RLA	LRA			Nominal kW**	FLA	MCA	MOCP	FLA	LRA
004 (3 Tons)	208/230-1-60	STD	187	254	16.4	96.0	1.5	3.1	—	—	30.3/ 30.3	35/ 35††	30/ 30	112/112
									3.3/ 4.4	15.9/18.3	50.2/ 53.2	60/ 60††	48/ 51	128/130
									4.9/ 6.5	23.6/27.1	59.8/ 64.2	70/ 70	57/ 61	135/139
									6.5/ 8.7	31.3/36.3	69.4/ 75.7	70/ 80	66/ 72	143/148
									7.9/10.5	38.0/43.6	77.8/ 85.1	80/ 90	74/ 81	150/156***
									9.8/13.0	47.1/54.2	89.2/ 98.1	90/100	84/ 72	159/166***
		ALT	187	254	16.4	96.0	1.5	4.9	—	—	31.7/ 31.7	35/ 35††	32/ 32	116/116
									3.3/ 4.4	15.9/18.3	51.6/ 54.6	60/ 60††	50/ 53	132/134
									4.9/ 6.5	23.6/27.1	61.2/ 65.6	70/ 70	59/ 63	140/143
									6.5/ 8.7	31.3/36.3	70.8/ 77.1	80/ 80	68/ 73	147/152
									7.9/10.5	38.0/43.6	79.2/ 86.5	80/ 90	75/ 82	154/160***
									9.8/13.0	47.1/54.2	90.6/ 99.5	100/110	86/ 94	163/170***
	208/230-3-60	STD	187	254	10.2	75.0	1.5	3.1	—	—	22.6/ 22.6	25/ 25††	23/ 23	91/ 91
									3.3/ 4.4	9.2/10.6	34.1/ 35.8	40/ 40††	34/ 35	100/101
									4.9/ 6.5	13.6/15.6	39.6/ 42.1	45/ 45††	39/ 41	104/106
									8.5/ 8.7	18.0/20.9	45.1/ 48.7	50/ 50††	44/ 47	109/112
									7.9/10.5	21.9/25.3	49.9/ 54.2	60/ 60††	48/ 52	113/116
									12.0/16.0	33.3/38.5	64.2/ 70.7	70/ 80††	61/ 67	124/129
		ALT	187	254	10.2	75.0	1.5	4.9	—	—	24.0/ 24.0	30/ 30††	25/ 25	95/ 95
									3.3/ 4.4	9.2/10.6	35.5/ 37.2	40/ 40††	35/ 37	104/106
									4.9/ 6.5	13.6/15.6	41.0/ 43.5	45/ 45††	40/ 43	109/111
									6.5/ 8.7	18.0/20.9	46.5/ 50.1	50/ 60††	45/ 49	113/116
									7.9/10.5	21.9/25.3	51.3/ 55.6	60/ 60††	50/ 54	117/120
									12.0/16.0	33.3/38.5	65.6/ 72.1	70/ 80	63/ 69	128/134
		HIGH-STATIC	187	254	10.2	75.0	1.5	5.8	—	—	24.9/ 24.9	25/ 25††	26/ 26	125/125
									3.3/ 4.4	9.2/10.6	36.4/ 38.1	40/ 40††	36/ 38	134/135
									4.9/ 6.5	13.6/15.6	41.9/ 44.4	45/ 45††	41/ 44	138/140
									6.5/ 8.7	18.0/20.9	47.4/ 51.0	50/ 50††	46/ 50	143/145
									7.9/10.5	21.9/25.3	52.2/ 56.5	60/ 60††	51/ 55	146/150
									12.0/16.0	33.3/38.5	66.5/ 73.0	70/ 80	64/ 70	158/163
	460-3-60	STD	414	508	4.8	40.0	0.8	1.7	—	—	10.3	15††	10	47
									6.0	7.2	19.3	20††	19	54
									8.8	10.6	23.5	25††	23	58
									11.5	13.8	27.5	30††	26	61
									14.0	16.8	31.3	35††	30	64
		ALT	414	508	4.8	40.0	0.8	2.1	—	—	11.1	15††	11	50
									6.0	7.2	20.1	25††	20	57
									8.8	10.6	24.3	25††	24	61
									11.5	13.8	28.3	30††	27	64
									14.0	16.8	32.1	35††	31	67
		HIGH-STATIC	414	508	4.8	40.0	0.8	2.6	—	—	11.6	15††	12	65
									6.0	7.2	20.6	25††	20	72
									8.8	10.6	24.8	25††	24	75
									11.5	13.8	28.8	30††	28	78
									14.0	16.8	32.6	35††	31	81
	575-3-60	STD	518	632	3.8	31.0	0.8	1.7	—	—	8.2	15††	8	37
		ALT	518	632	3.8	31.0	0.8	2.1	—	—	8.8	15††	9	39
		HIGH-STATIC	518	632	3.8	31.0	0.8	2.6	—	—	9.2	15††	9	51
005 (4 Tons)	208/230-1-60	STD	187	254	29.1	132.0	1.5	3.5	—	—	46.2/ 46.2	50/ 50††	45/ 45	148/148
									3.3/ 4.4	15.9/18.3	66.1/ 69.1	70/ 70	63/ 66	163/166
									6.5/ 8.7	31.3/36.3	85.3/ 91.6	90/100	81/ 86	179/184
									9.8/13.0	47.1/54.2	105.1/113.9	110/126	99/107	195/202
									13.1/17.4	63.0/72.5	124.1/136.8	125/150	117/128	211/220
									15.8/21.0	76.0/87.5	142.1/155.6	150/175	132/145	224/235
		ALT	187	254	29.1	132.0	1.5	4.9	—	—	47.6/ 47.6	50/ 50††	46/ 46	152/152
									3.3/ 4.4	15.9/18.3	67.5/ 70.5	70/ 80	65/ 67	168/170
									6.5/ 8.7	31.3/36.3	86.7/ 93.0	90/100	82/ 88	183/188
									9.8/13.0	47.1/54.2	106.5/115.3	110/125	101/109	199/206
									13.1/17.4	63.0/72.5	126.3/138.2	150/150	119/130	215/225
									15.8/21.0	76.0/87.5	142.6/157.0	150/175	134/147	228/240
	208/230-3-60	STD	187	254	16.8	91.0	1.5	3.5	—	—	30.8/ 30.8	35/ 35††	31/ 31	107/107
									4.9/ 6.5	13.6/15.6	47.8/ 50.3	50/ 60††	46/ 49	120/107
									6.5/ 8.7	18.0/20.9	53.3/ 56.9	60/ 60††	51/ 55	125/127
									12.0/16.0	33.3/38.5	72.4/ 78.9	80/ 80	69/ 75	140/145
									15.8/21.0	43.9/50.5	85.7/ 93.9	90/100	81/ 89	150/157
		ALT	187	254	16.8	91.0	1.5	4.9	—	—	32.2/ 32.2	35/ 35††	32/ 32	111/111
									4.9/ 6.5	13.6/15.6	49.2/ 51.7	50/ 60††	48/ 50	125/127
									6.5/ 8.7	18.0/20.9	54.7/ 58.3	60/ 60††	53/ 56	129/132
									12.0/16.0	33.3/38.5	73.8/ 80.3	80/ 90	71/ 76	144/150
									15.8/21.0	43.9/50.5	87.1/ 95.3	90/100	83/ 90	155/162
		HIGH-STATIC	187	254	16.8	91.0	1.5	5.8	—	—	33.1/ 33.1	35/ 35††	33/ 33	141/141
									4.9/ 6.5	13.6/15.6	50.1/ 52.6	60/ 60††	49/ 51	154/156
									6.5/ 8.7	18.0/20.9	55.6/ 59.2	60/ 60††	54/ 57	159/161
									12.0/16.0	33.3/38.5	74.7/ 81.2	80/ 90	72/ 78	174/179
									15.8/21.0	43.9/50.5	88.0/ 96.2	90/100	84/ 91	184/191***

NOTE: Legend and Notes for Electrical Data are on page 78.

UNITS WITH ELECTRICAL CONVENIENCE OUTLET (cont)

UNIT 50TFQ	NOMINAL V-PH-Hz	IFM TYPE	VOLTAGE RANGE		COMPRESSOR (each)		OFM FLA	IFM FLA	ELECTRIC HEAT*		POWER SUPPLY		DISCONNECT SIZE†	
			Min	Max	RLA	LRA			Nominal kW**	FLA	MCA	MOCP	FLA	LRA
005 (4 Tons) (cont)	460-3-60	STD	414	508	8.4	50.0	0.8	1.8	—	—	15.3	20††	15	58
									6.0	7.2	24.3	25††	23	66
									11.5	13.8	32.5	35††	31	72
									14.0	16.8	36.3	40††	34	75
									23.0	27.7	49.9	50††	47	86
		ALT	414	508	8.4	50.0	0.8	2.1	—	—	15.6	20††	15	60
									6.0	7.2	24.6	25††	24	67
									11.5	13.8	32.8	35††	31	74
									14.0	16.8	36.6	40††	35	77
									23.0	27.7	50.2	60††	47	88
		HIGH-STATIC	414	508	8.4	50.0	0.8	2.6	—	—	16.1	20††	16	75
									6.0	7.2	25.1	30††	24	82
									11.5	13.8	33.3	35††	32	88
									14.0	16.8	37.1	40††	35	91
									23.0	27.7	50.7	60††	48	102
	575-3-60	STD	518	632	6.7	37.0	0.8	1.8	—	—	12.2	15††	12	44
		ALT	518	632	6.7	37.0	0.8	2.1	—	—	12.4	15††	12	45
		HIGH-STATIC	518	632	6.7	37.0	0.8	2.6	—	—	12.8	15††	13	57
006 (5 Tons)	208/230-1-60	STD	187	254	26.7	170.0	1.5	5.9	—	—	45.6/ 45.6	50/ 50††	45/ 45	189/189
									4.9/ 6.5	23.6/27.1	75.1/ 79.5	80/ 80	72/ 76	213/216
									6.5/ 8.7	31.3/36.3	84.7/ 91.0	90/100	81/ 86	220/225***
									9.8/13.0	47.1/54.2	104.3/113.3	110/125	99/107	236/243***
									13.1/17.4	63.0/72.5	124.3/136.2	150/150	117/128	252/261***
									15.8/21.0	76.0/87.5	140.6/155.0	150/175	132/145	265/276***
		ALT	187	254	26.7	170.0	1.5	8.8	—	—	48.5/ 48.5	50/ 50††	48/ 48	222/222
									4.9/ 6.5	23.6/27.1	78.0/ 82.4	80/ 90	75/ 79	246/249
									6.5/ 8.7	31.3/36.3	87.6/ 93.9	90/100	84/ 90	253/258***
									9.8/13.0	47.1/54.2	107.4/116.2	110/125	102/110	269/276***
									13.1/17.4	63.0/72.5	127.2/139.1	150/150	121/131	285/294***
									15.8/21.0	76.0/87.5	143.5/157.9	150/175	135/149	298/309***
	208/230-3-60	STD	187	254	15.4	124.0	1.5	5.9	—	—	31.5/ 31.5	35/ 35††	32/ 32	143/143
									4.9/ 6.5	13.6/15.6	48.5/ 51.0	50/ 60††	47/ 50	157/159
									7.9/10.5	21.9/25.3	58.8/ 63.1	60/ 70	57/ 61	165/168
									12.0/16.0	33.3/38.5	73.1/ 79.6	80/ 90	70/ 76	176/181
									15.8/21.0	43.9/50.5	86.3/ 94.6	90/100	82/ 90	187/193***
									19.9/26.5	55.2/63.8	100.5/111.2	110/125	95/105	198/207***
		ALT	187	254	15.4	124.0	1.5	5.8	—	—	31.4/ 31.4	35/ 35††	32/ 32	174/174
									4.9/ 6.5	13.6/15.6	48.4/ 50.9	50/ 60††	47/ 50	187/189
									7.9/10.5	21.9/25.3	58.7/ 63.0	60/ 70	57/ 61	195/199
									12.0/16.0	33.3/38.5	73.0/ 79.5	80/ 90	70/ 76	207/212
									15.8/21.0	43.9/50.5	86.2/ 94.5	90/100	82/ 90	217/224***
									19.9/26.5	55.2/63.8	100.4/111.1	110/125	95/105	229/237***
		HIGH-STATIC	187	254	15.4	124.0	1.5	7.5	—	—	33.1/ 33.1	35/ 35††	34/ 34	193/193
									4.9/ 6.5	13.6/15.6	50.1/ 52.6	60/ 60††	49/ 52	206/208
									7.9/10.5	21.9/25.3	60.4/ 64.7	70/ 70	59/ 63	214/218
									12.0/16.0	33.3/38.5	74.7/ 81.2	80/ 90	72/ 78	226/231
									15.8/21.0	43.9/50.5	87.9/ 96.2	90/100	84/ 92	236/243***
									19.9/26.5	55.2/63.8	102.1/112.8	110/125	97/107	248/256***
	460-3-60	STD	414	508	7.7	59.6	0.8	3.2	—	—	15.8	20††	16	70
									6.0	7.2	24.8	30††	24	77
									11.5	13.8	33.1	35††	32	83
									14.0	16.8	36.8	40††	35	86
									23.0	27.7	50.4	60††	48	97
									25.5	30.7	54.2	60††	51	100
		ALT	414	508	7.7	59.6	0.8	2.6	—	—	15.2	20††	15	84
									6.0	7.2	24.2	30††	24	91
									11.5	13.8	32.5	35††	31	98
									14.0	16.8	36.2	40††	35	101
									23.0	27.7	49.8	60††	47	112
									25.5	30.7	53.6	60††	51	115
		HIGH-STATIC	414	508	7.7	59.6	0.8	3.4	—	—	16.0	20††	16	94
									6.0	7.2	25.0	25††	24	101
									11.5	13.8	33.3	35††	32	107
									14.0	16.8	34.8	35††	33	108
									23.0	27.7	50.6	60††	48	121
									25.5	30.7	54.4	60††	51	124
	575-3-60	STD	518	632	6.2	49.4	0.8	3.2	—	—	12.7	15††	13	57
		ALT	518	632	6.2	49.4	0.8	2.6	—	—	12.2	15††	12	69
		HIGH-STATIC	518	632	6.2	49.4	0.8	3.4	—	—	12.9	15††	13	77

NOTE: Legend and Notes for Electrical Data are on page 78.

Electrical data (cont)

UNITS WITH ELECTRICAL CONVENIENCE OUTLET (cont)

UNIT 50TFQ	NOMINAL V-PH-Hz	IFM TYPE	VOLTAGE RANGE		COMPRESSOR (each)		OFM FLA	IFM FLA	ELECTRIC HEAT*		POWER SUPPLY		DISCONNECT SIZE†	
			Min	Max	RLA	LRA			Nominal kW**	FLA	MCA	MOCP	FLA	LRA
007 (6 Tons)	208/230-3-60	STD	187	254	22.7	146.0	1.4	5.8	—	—	40.4/ 40.4	45/ 45††	40/ 40	195/195
									4.9/ 6.5	13.6/15.6	57.4/ 59.9	60/ 60††	56/ 58	208/211
									7.9/10.5	21.9/25.3	67.8/ 72.0	70/ 80	65/ 69	217/220
									12.0/16.0	33.3/38.5	82.0/ 88.5	90/ 90	78/ 84	228/233***
									15.8/21.0	43.9/50.5	95.3/103.5	100/110	90/ 98	239/245***
									19.9/26.5	55.2/63.8	109.4/120.1	110/125	103/113	250/259***
		HIGH-STATIC	187	254	22.7	146.0	1.4	7.5	—	—	42.1/ 42.1	45/ 45††	42/ 42	214/214
									4.9/ 6.5	13.6/15.6	59.1/ 61.6	60/ 70	58/ 60	227/229
									7.9/10.5	21.9/25.3	69.5/ 73.7	70/ 80	67/ 71	236/239
									12.0/16.0	33.3/38.5	83.7/ 90.2	90/100	80/ 86	247/252***
									15.8/21.0	43.9/50.5	97.0/105.2	100/110	92/100	258/264***
									19.9/26.5	55.2/63.8	111.1/121.8	125/125	105/115	269/278***
	460-3-60	STD	414	508	11.4	73.0	0.7	2.6	—	—	19.7	20††	19	97
									6.0	7.2	28.7	30††	28	104
									11.5	13.8	37.0	40††	35	111
									14.0	16.8	40.7	45††	39	114
									23.0	27.7	54.4	60††	51	125
									25.5	30.7	58.1	60††	55	128
		HIGH-STATIC	414	508	11.4	73.0	0.7	3.4	—	—	20.5	25††	20	107
									6.0	7.2	29.5	30††	29	114
									11.5	13.8	37.8	40††	36	121
									14.0	16.8	41.5	45††	40	124
									23.0	27.7	55.2	60††	52	134
									25.5	30.7	58.9	60††	56	137
	575-3-60	STD	518	632	9.1	58.4	0.7	2.6	—	—	15.8	20††	16	78
		HIGH-STATIC	518	632	9.1	58.4	0.7	3.4	—	—	16.4	20††	16	85
008 ($7^1/_2$ Tons)	208/230-3-60	STD	187	254	13.4	91.0	1.4	5.8	—	—	43.6/ 43.6	45/ 45††	46/ 46	234/234
									7.8/10.5	21.7/ 25.0	70.7/ 74.8	80/ 80	71/ 75	256/259
									12.0/16.0	33.3/ 38.5	85.2/ 91.7	90/100	85/ 91	267/272***
									18.6/24.8	51.6/ 59.7	108.1/118.2	110/125	106/115	285/294***
									24.0/32.0	66.6/ 77.0	126.8/139.8	150/150	123/135	300/311***
									31.8/42.4	88.3/102.0	153.9/171.1	175/175	148/164	322/336***
		HIGH-STATIC	187	254	13.4	91.0	1.4	10.6	—	—	48.4/ 48.4	50/ 50††	52/ 52	277/277
									7.8/10.5	21.7/ 25.0	75.5/ 79.6	80/ 80	77/ 81	299/302***
									12.0/16.0	33.3/ 38.5	90.0/ 96.5	90/100	90/ 96	311/316***
									18.6/24.8	51.6/ 59.7	112.9/123.0	125/125	111/120	329/337***
									24.0/32.0	66.6/ 77.0	131.6/144.6	150/150	128/140	344/354***
									31.8/42.4	88.3/102.0	158.7/175.9	175/200	153/169	366/379***
	460-3-60	STD	414	508	6.7	42.0	0.7	2.6	—	—	21.3	25††	23	110
									14.0	16.7	42.1	45††	42	127
									16.5	19.8	46.0	50††	45	130
									27.8	33.4	63.0	70	61	143
									33.0	39.7	70.9	80	68	150
									41.7	50.2	84.0	90	80	160***
		HIGH-STATIC	414	508	6.7	42.0	0.7	4.8	—	—	23.5	25††	25	132
									14.0	16.7	44.3	45††	44	148
									16.5	19.8	48.2	50††	48	151
									27.8	33.4	65.2	70	63	165
									33.0	39.7	73.1	80	71	171
									41.7	50.2	86.2	90	83	182***
	575-3-60	STD	518	632	5.4	39.0	0.7	2.6	—	—	17.1	20††	18	99
									17.0	17.1	38.5	40††	38	116
									34.0	34.1	59.7	60††	57	133
		HIGH-STATIC	518	632	5.4	39.0	0.7	4.8	—	—	18.9	20††	20	116
									17.0	17.1	40.2	45††	40	133
									34.0	34.1	61.5	70	59	150

NOTE: Legend and Notes for Electrical Data are on page 78.

UNITS WITH ELECTRICAL CONVENIENCE OUTLET (cont)

UNIT 50TFQ	NOMINAL V-PH-Hz	IFM TYPE	VOLTAGE RANGE		COMPRESSOR (each)		OFM FLA	IFM FLA	ELECTRIC HEAT*		POWER SUPPLY		DISCONNECT SIZE†	
			Min	Max	RLA	LRA			Nominal kW**	FLA	MCA	MOCP	FLA	LRA
009 (8½ Tons)	208/230-3-60	STD	187	254	16.0	137.0	1.4	5.8	—	—	44.6/ 49.9	50/ 50††	52/ 52	326/326
									7.8/10.5	21.7/ 25.0	76.5/ 80.7	80/ 90	77/ 81	348/351
									12.0/16.0	33.3/ 38.5	91.0/ 97.5	100/100	91/ 96	359/364
									18.6/24.8	51.6/ 59.7	113.9/124.0	125/125	112/121	377/386
									24.0/32.0	66.6/ 77.0	132.7/145.7	150/150	129/144	392/403
									31.8/42.4	88.3/102.0	154.8/176.9	175/200	154/170	414/428
		HIGH-STATIC	187	254	16.0	137.0	1.4	10.6	—	—	49.2/ 54.2	60/ 60††	58/ 58	369/369
									7.8/10.5	21.7/ 25.0	81.3/ 85.5	90/ 90	83/ 86	391/394***
									12.0/16.0	33.3/ 38.5	95.8/102.3	100/110	96/102	403/408***
									18.6/24.8	51.6/ 59.7	118.7/128.8	125/150	117/126	421/429***
									24.0/32.0	66.6/ 77.0	137.5/150.5	150/175	134/146	436/446***
									31.8/42.4	88.3/102.0	164.6/181.7	175/200	159/175	458/471***
	460-3-60	STD	414	508	8.3	69.0	0.7	2.6	—	—	24.9	25††	26	164
									14.0	16.7	45.7	50††	45	181
									16.5	19.8	49.6	50††	49	184
									27.8	33.4	66.6	70	65	197
									33.0	39.7	74.5	80	72	204
									41.7	50.2	87.6	90	84	214***
		HIGH-STATIC	414	508	8.3	69.0	0.7	4.8	—	—	24.9	30††	29	186
									14.0	16.7	47.9	50††	48	202
									16.5	19.8	51.8	60††	51	205
									27.8	33.4	68.8	70	67	219
									33.0	39.7	76.7	80	74	225
									41.7	50.2	89.8	90	86	236***
	575-3-60	STD	518	632	6.4	58.0	0.7	2.6	—	—	18.4	20††	20	137
									17.0	17.1	40.7	45††	40	154
									34.0	34.1	62.0	70	60	171
		HIGH-STATIC	518	632	6.4	58.0	0.7	4.8	—	—	20.6	25††	22	154
									17.0	17.1	42.5	45††	42	171
									34.0	34.1	63.7	70	62	188
012 (10 Tons)	208/230-3-60	STD	187	254	17.2	124.0	1.4	5.8	—	—	52.1/ 52.1	60/ 60††	55/ 55	300/300
									7.8/10.4	21.7/ 25.0	79.2/ 83.4	80/ 90	80/ 84	322/325***
									12.0/16.0	33.3/ 38.5	93.7/100.2	100/110	93/ 99	333/338***
									24.0/32.0	66.6/ 77.0	135.4/148.4	150/150	132/144	366/377***
									31.8/42.4	88.3/102.0	162.5/179.6	175/200	157/172	388/402***
									37.6/50.0	104.4/120.3	182.6/172.4	200/200	175/193	404/420***
		ALT	187	254	17.2	124.0	1.4	7.5	—	—	53.8/ 53.8	60/ 60††	57/ 57	319/319
									7.8/10.4	21.7/ 25.0	80.9/ 85.1	90/ 90	82/ 86	341/344***
									12.0/16.0	33.3/ 38.5	95.4/101.9	100/110	93/101	352/357***
									24.0/32.0	66.6/ 77.0	137.1/150.1	150/175	134/145	385/396***
									31.8/42.4	88.3/102.0	164.2/181.3	175/200	158/174	407/421***
									37.6/50.0	104.4/120.3	184.3/174.1	200/200	177/195	423/439***
		HIGH-STATIC	187	254	17.2	124.0	1.4	15.0	—	—	61.3/ 61.3	70/ 70	66/ 66	367/367
									7.8/10.4	21.7/ 25.0	88.4/ 92.6	90/100	91/ 94	389/392***
									12.0/16.0	33.3/ 38.5	102.9/109.4	110/110	104/110	400/405***
									24.0/32.0	66.6/ 77.0	144.6/157.6	150/175	142/154	433/444***
									31.8/42.4	88.3/102.0	171.7/188.8	175/200	167/183	455/459***
									37.6/50.0	104.4/120.3	191.8/181.6	200/200	186/204	471/487***
	460-3-60	STD	414	508	8.6	59.6	0.7	2.6	—	—	25.5	30††	27	145
									16.5	19.8	50.3	60††	50	165
									27.8	33.4	67.3	80	65	178
									33.0	39.7	75.2	80	73	185
									41.7	50.2	88.3	90	85	195***
									50.0	60.1	85.6	90	96	205***
		ALT	414	508	8.6	59.6	0.7	3.4	—	—	26.3	30††	28	185
									16.5	19.8	51.1	60††	51	204
									27.8	33.4	68.1	70	66	218
									33.0	39.7	76.0	80	73	224
									41.7	50.2	89.1	90	85	235***
									50.0	60.1	86.4	90	97	245***
		HIGH-STATIC	414	508	8.6	59.6	0.7	7.4	—	—	30.3	35††	32	179
									16.5	19.8	55.1	60††	55	198
									27.8	33.4	72.1	80	71	212
									33.0	39.7	80.0	80	78	218
									41.7	50.2	93.1	100	90	229***
									50.0	60.1	90.4	100	102	239***
	575-3-60	STD	518	632	6.9	49.4	0.7	2.6	—	—	20.5	25††	22	120
									17.0	17.1	41.8	45††	41	137
									34.0	34.1	63.1	70	61	154
									51.0	51.2	71.7	80	80	171***
		ALT	518	632	6.9	49.4	0.7	3.4	—	—	21.1	25††	22	151
									17.0	17.1	42.5	45††	42	168
									34.0	34.1	63.7	70	62	185
									51.0	51.2	72.3	80	81	202***
		HIGH-STATIC	518	632	6.9	49.4	0.7	7.4	—	—	24.3	25††	26	146
									17.0	17.1	45.7	50††	46	163
									34.0	34.1	66.9	70	65	180
									51.0	51.2	75.5	80	85	198***

NOTE: Legend and Notes for Electrical Data are on page 78.

Electrical data (cont)

LEGEND AND NOTES FOR ELECTRICAL TABLES

LEGEND

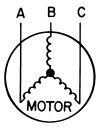
FLA — Full Load Amps
HACR — Heating, Air Conditioning and Refrigeration
IFM — Indoor Fan Motor
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
MOCP — Maximum Overcurrent Protection
NEC — National Electrical Code
OFM — Outdoor Fan Motor
RLA — Rated Load Amps

*Heaters are field installed only.
†Used to determine minimum disconnect size per NEC.
**Heater capacity (kW) is based on heater voltage of 208 v, 240 v, 480 v, and 575 v. If power distribution voltage to unit varies from rated heater voltage, heater kW will vary accordingly.
††Fuse or HACR circuit breaker.
***Optional disconnect switch is unavailable.

NOTES:
1. In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker.
2. **Unbalanced 3-Phase Supply Voltage**
   Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percent of voltage imbalance.

   $$\% \text{ Voltage Imbalance} = 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 460-3-60.



AB = 452 v
BC = 464 v
AC = 455 v

$$\text{Average Voltage} = \frac{452 + 464 + 455}{3}$$

$$= \frac{1371}{3}$$

$$= 457$$

Determine maximum deviation from average voltage.
(AB) 457 – 452 = 5 v
(BC) 464 – 457 = 7 v
(AC) 457 – 455 = 2 v

Maximum deviation is 7 v.

Determine percent of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{7}{457}$$

$$= 1.53\%$$

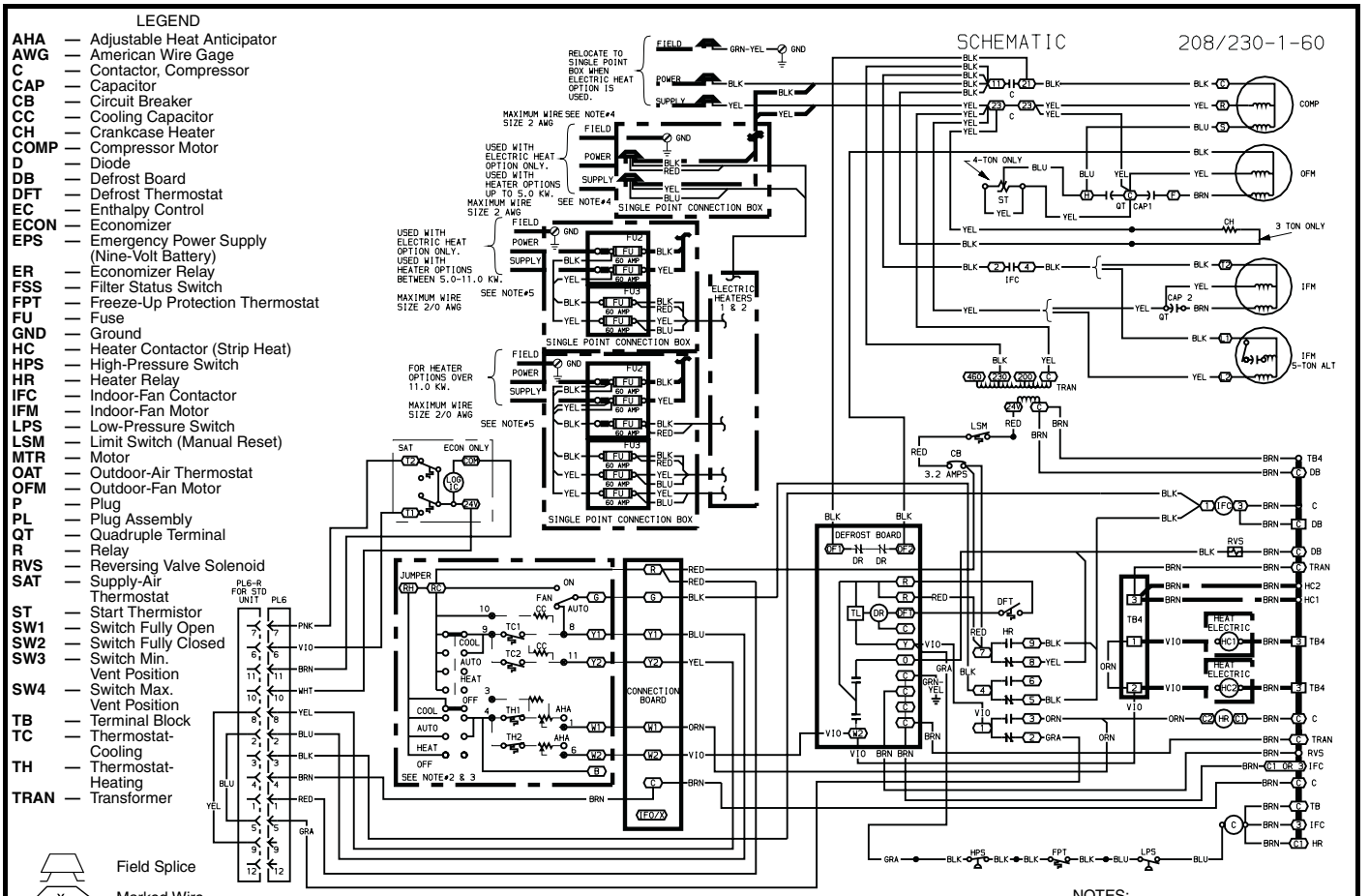
This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

Typical wiring schematic — 50TFQ004-007

LEGEND

AHA	—	Adjustable Heat Anticipator
AWG	—	American Wire Gage
C	—	Contactor, Compressor
CAP	—	Capacitor
CB	—	Circuit Breaker
CC	—	Cooling Capacitor
CH	—	Crankcase Heater
COMP	—	Compressor Motor
D	—	Diode
DB	—	Defrost Board
DFT	—	Defrost Thermostat
EC	—	Enthalpy Control
ECON	—	Economizer
EPS	—	Emergency Power Supply (Nine-Volt Battery)
ER	—	Economizer Relay
FSS	—	Filter Status Switch
FPT	—	Freeze-Up Protection Thermostat
FU	—	Fuse
GND	—	Ground
HC	—	Heater Contactor (Strip Heat)
HPS	—	High-Pressure Switch
HR	—	Heater Relay
IFC	—	Indoor-Fan Contactor
IFM	—	Indoor-Fan Motor
LPS	—	Low-Pressure Switch
LSM	—	Limit Switch (Manual Reset)
MTR	—	Motor
OAT	—	Outdoor-Air Thermostat
OFM	—	Outdoor-Fan Motor
P	—	Plug
PL	—	Plug Assembly
QT	—	Quadruple Terminal
R	—	Relay
RVS	—	Reversing Valve Solenoid
SAT	—	Supply-Air Thermostat
ST	—	Start Thermistor
SW1	—	Switch Fully Open
SW2	—	Switch Fully Closed
SW3	—	Switch Min. Vent Position
SW4	—	Switch Max. Vent Position
TB	—	Terminal Block
TC	—	Thermostat-Cooling
TH	—	Thermostat-Heating
TRAN	—	Transformer



Field Splice

Marked Wire

Terminal (Marked)

Terminal (Unmarked)

Terminal Block

Splice

Splice (Marked)

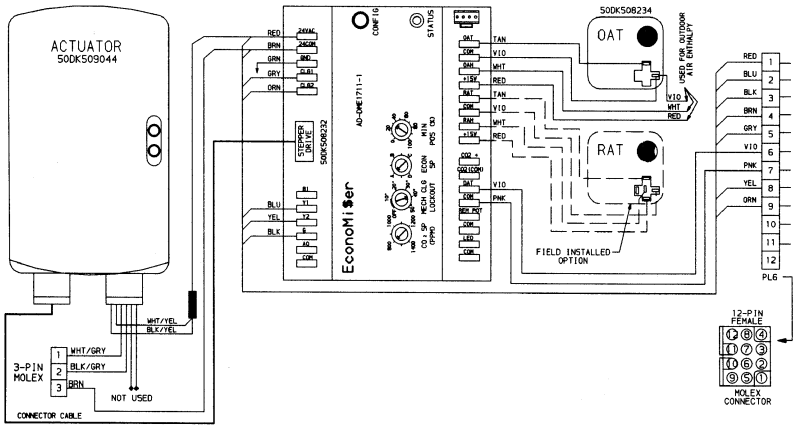
Factory Wiring

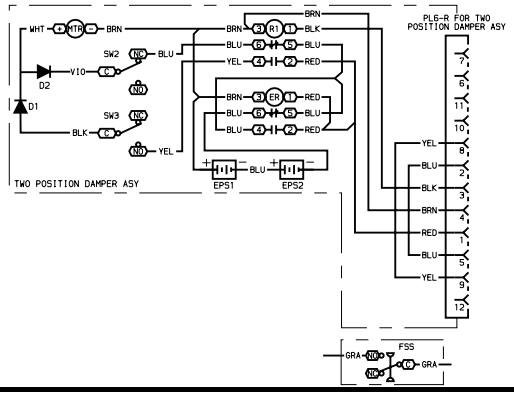
Field Control Wiring

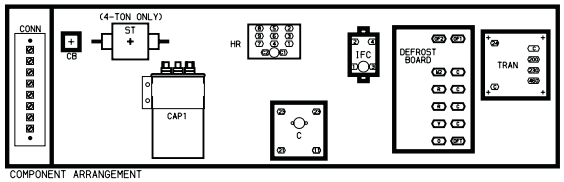
Field Power Wiring

Accessory or Optional Wiring

To indicate common potential only. Not to represent wiring.





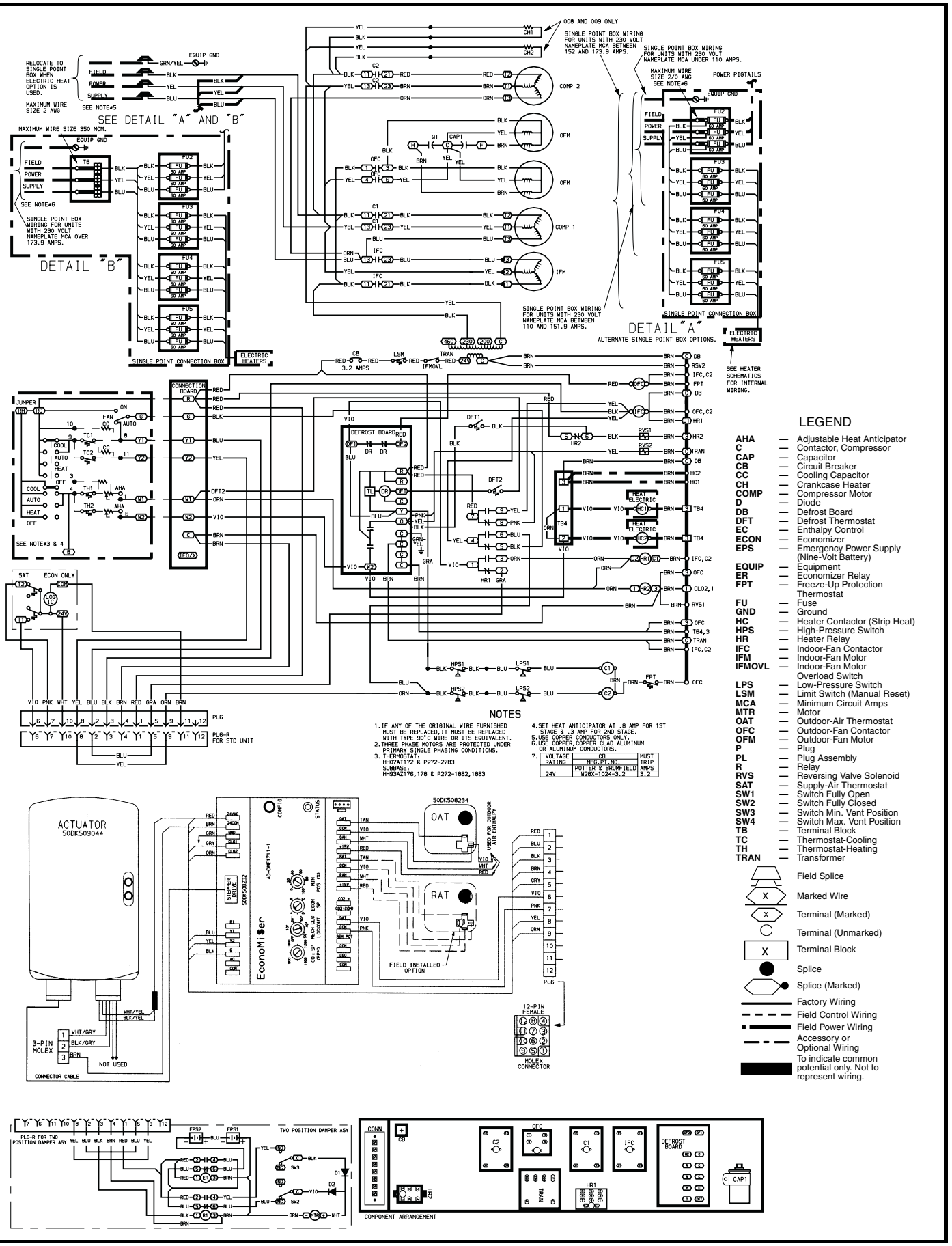


NOTES:

1. If any of the original wire furnished must be replaced, it must be replaced with Type 90 C wire or its equivalent.
2. Thermostat: HH07AT170, 172, 174 & P272-2783.
   Subbase: HH93AZ176, 178 & P272-1882, 1883.
3. Set heat anticipator at .8 amp for first stage and .3 amp for second stage.
4. Use copper conductors only.
5. Use copper, copper-clad aluminum or aluminum conductors.
6.

VOLTAGE RATING	CB	MUST TRIP AMPS
24V	MFG. PT. NO.	
	POTTER & BRUMFIELD	
	W28X-1024-3.2	3.2

Typical wiring schematic — 50TFQ008-012


008 AND 009 ONLY
SINGLE POINT BOX WIRING FOR UNITS WITH 230 VOLT NAMEPLATE MCA BETWEEN 152 AND 173.9 AMPS.
SINGLE POINT BOX WIRING FOR UNITS WITH 230 VOLT NAMEPLATE MCA UNDER 110 AMPS.
SEE DETAIL "A" AND "B"
DETAIL "B"
DETAIL "A"
SINGLE POINT CONNECTION BOX
ELECTRIC HEATERS
SEE HEATER SCHEMATICS FOR INTERNAL WIRING.
COMP 2
COMP 1
OFM
IFM
NOTES
1. IF ANY OF THE ORIGINAL WIRE FURNISHED MUST BE REPLACED, IT MUST BE REPLACED WITH TYPE 90°C WIRE OR ITS EQUIVALENT.
2. THREE PHASE MOTORS ARE PROTECTED UNDER PRIMARY SINGLE PHASING CONDITIONS.
3. THERMOSTAT: HH07AT172 & P272-2783 SUBBASE: HH93AZ176,178 & P272-1882,1883
4. SET HEAT ANTICIPATOR AT .8 AMP FOR 1ST STAGE & .3 AMP FOR 2ND STAGE.
5. USE COPPER CONDUCTORS ONLY.
6. USE COPPER,COPPER CLAD ALUMINUM OR ALUMINUM CONDUCTORS.
7. VOLTAGE RATING 24V; CB MFG,PT,NO. POTTER & BRUMFIELD W28X-1024-3.2; MUST TRIP AMPS 3.2
ACTUATOR 50DK509044
CONNECTOR CABLE
3-PIN MOLEX
NOT USED
12-PIN FEMALE
MOLEX CONNECTOR
OAT
RAT
FIELD INSTALLED OPTION
PL6
PL6-R FOR STD UNIT
PL6-R FOR TWO POSITION DAMPER ASY
TWO POSITION DAMPER ASY
COMPONENT ARRANGEMENT

LEGEND

AHA	—	Adjustable Heat Anticipator
C	—	Contactor, Compressor
CAP	—	Capacitor
CB	—	Circuit Breaker
CC	—	Cooling Capacitor
CH	—	Crankcase Heater
COMP	—	Compressor Motor
D	—	Diode
DB	—	Defrost Board
DFT	—	Defrost Thermostat
EC	—	Enthalpy Control
ECON	—	Economizer
EPS	—	Emergency Power Supply (Nine-Volt Battery)
EQUIP	—	Equipment
ER	—	Economizer Relay
FPT	—	Freeze-Up Protection Thermostat
FU	—	Fuse
GND	—	Ground
HC	—	Heater Contactor (Strip Heat)
HPS	—	High-Pressure Switch
HR	—	Heater Relay
IFC	—	Indoor-Fan Contactor
IFM	—	Indoor-Fan Motor
IFMOVL	—	Indoor-Fan Motor Overload Switch
LPS	—	Low-Pressure Switch
LSM	—	Limit Switch (Manual Reset)
MCA	—	Minimum Circuit Amps
MTR	—	Motor
OAT	—	Outdoor-Air Thermostat
OFC	—	Outdoor-Fan Contactor
OFM	—	Outdoor-Fan Motor
P	—	Plug
PL	—	Plug Assembly
R	—	Relay
RVS	—	Reversing Valve Solenoid
SAT	—	Supply-Air Thermostat
SW1	—	Switch Fully Open
SW2	—	Switch Fully Closed
SW3	—	Switch Min. Vent Position
SW4	—	Switch Max. Vent Position
TB	—	Terminal Block
TC	—	Thermostat-Cooling
TH	—	Thermostat-Heating
TRAN	—	Transformer

Field Splice
Marked Wire
Terminal (Marked)
Terminal (Unmarked)
Terminal Block
Splice
Splice (Marked)
Factory Wiring
Field Control Wiring
Field Power Wiring
Accessory or Optional Wiring
To indicate common potential only. Not to represent wiring.

Guide specifications — 50TFQ units

Packaged Rooftop Air-to-Air Heat Pump with Electric Heat Option — Constant Volume Application

HVAC Guide Specifications

Size Range: **3 to 10 Tons, Nominal Cooling**

Carrier Model Number: **50TFQ**

Part 1 — General

1.01 SYSTEM DESCRIPTION

Outdoor rooftop- or slab-mounted, electrically controlled air-to-air heat pump utilizing a hermetic compressor for heating and cooling duty. Unit shall discharge supply air vertically or horizontally as shown on contract drawings.

1.02 QUALITY ASSURANCE

A. Unit shall be rated in accordance with ARI Standards 210/240 and 270.

B. Unit shall be designed to conform to ASHRAE 15, latest revision, and in accordance with UL 1995.

C. Unit shall be UL tested and certified in accordance with ANSI Z21.47 Standard and UL listed and certified under Canadian Standards as a total package for safety requirements.

D. Roof curb shall be designed to conform to NRCA Standards.

E. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.

F. Unit casing shall be capable of withstanding Federal Test Method Standard No. 141 (Method 6061) 500-hour salt spray test.

1.03 DELIVERY, STORAGE, AND HANDLING

Unit(s) shall be stored and handled per manufacturer's recommendations.

Part 2 — Products

2.01 EQUIPMENT (STANDARD)

A. General:

Factory-assembled, single-piece air-to-air heat pump. Contained within the unit enclosure shall be all factory wiring, piping, controls, refrigerant charge (R-22), and special features required prior to field start-up.

B. Unit Cabinet:

1. Unit cabinet shall be constructed of galvanized steel, bonderized and coated with a baked enamel finish on all externally exposed surfaces with primer coated internal panels.
2. Indoor fan cabinet interior shall be insulated with a minimum $1/2$-in. thick flexible fiberglass insulation coated on the air side.
3. Cabinet panels shall be easily removable for servicing.
4. Holes shall be provided in the base rails for rigging shackles to facilitate overhead rigging, and forklift slots shall be provided to facilitate maneuvering.
5. Unit shall have a factory-installed, sloped condensate drain pan made of a non-corrosive material, providing a minimum $3/4$-in. connection with both vertical and horizontal drains and shall comply with ASHRAE 62.
6. Unit shall have factory-installed filter access panel to provide filter access with tool-less removal.
7. Unit shall have standard thru-the-bottom power connection capability.

C. Fans:

1. Indoor blower shall be of the direct- or belt-driven, double inlet, forward-curved centrifugal type. Belt drive shall include an adjustable-pitch motor pulley.
2. Indoor blower shall be made from steel with a corrosion-resistant finish and shall be dynamically balanced.
3. Bearings shall be of the sealed, permanently lubricated, ball-bearing type for longer life and lower maintenance.
4. Outdoor fan shall be of the direct-driven propeller type and shall discharge air vertically.
5. Outdoor fan shall have aluminum blades riveted to corrosion-resistant steel spiders and shall be dynamically balanced.

D. Compressor(s):

1. Fully hermetic type, internally protected.
2. Factory rubber shock-mounted and internally spring mounted for vibration isolation.

E. Coils:

1. Outdoor and indoor coils shall have aluminum plate fins mechanically bonded to enhanced copper tubes with all joints brazed.
2. Tube sheet openings shall be belled to prevent tube wear.
3. Indoor coil shall be of the face split design.
4. Coils:
   a. Copper-fin coils shall be constructed of copper fins mechanically bonded to copper tubes and copper tube sheets. Galvanized steel tube sheets shall not be acceptable. A polymer strip shall prevent coil assembly from contacting the sheet metal coil pan to minimize potential for galvanic corrosion between coil and pan. All copper construction shall provide protection in moderate coastal environments.
   b. E-Coated aluminum-fin coils shall have a flexible epoxy polymer coating uniformly applied to all coil surface areas without material bridging between fins. Coating process shall ensure complete coil encapsulation. Color shall be high gloss black with

gloss — 60 deg of 65 to 90% per ASTM D523-89. Uniform dry film thickness from 0.8 to 1.2 mil on all surface areas including fin edges. Superior hardness characteristics of 2H per ASTM D3363-92A and cross-hatch adhesion of 4B-5B per ASTM D3359-93. Impact resistance shall be up to 160 in./lb (ASTM D2794-93). Humidity and water immersion resistance shall be up to minimum 1000 and 250 hours respectively (ASTM D2247-92 and ASTM D870-92). Corrosion durability shall be confirmed through testing to be no less than 1000 hours salt spray per ASTM B117-90. Coil construction shall be aluminum fins mechanically bonded to copper tubes.

c. E-Coated copper-fin coils shall have a flexible epoxy polymer coating uniformly applied to all coil surface areas without material bridging between fins. Coating process shall ensure complete coil encapsulation. Color shall be high gloss black with gloss — 60 deg of 65 to 90% per ASTM D523-89. Uniform dry film thickness from 0.8 to 1.2 mil on all surface areas including fin edges. Superior hardness characteristics of 2H per ASTM D3363-92A and cross-hatch adhesion of 4B-5B per ASTM D3359-93. Impact resistance shall be up to 160 in./lb (ASTM D2794-93). Humidity and water immersion resistance shall be up to minimum 1000 and 250 hours respectively (ASTM D2247-92 and ASTM D870-92). Corrosion durability shall be confirmed through testing to be no less than 1000 hours salt spray per ASTM B117-90. Coil construction shall be copper fins mechanically bonded to copper tubes with copper tube sheets. Galvanized steel tube sheets shall not be acceptable. A polymer strip shall prevent coil assembly from contacting sheet metal coil pan to maintain coating integrity and minimize corrosion potential between coil and pan.

d. Optional precoated aluminum-fin coils shall have a duable epoxy-phenolic coating to provide protection in mildly corrosive coastal environments. Coating shall be applied to the aluminum fin stock prior to the fin stamping process to create an inert barrier between the aluminum fin and copper tube. Epoxy-phenolic barrier shall minimize galvanic action between dissimilar metals.

F. Refrigerant Components: Refrigerant circuit components shall include:

1. Acutrol™ multiple independent circuit metering system.
2. Service gage connections on suction, discharge, and liquid line to charge, evacuate, and contain refrigerant.
3. Accumulator.
4. Reversing valve.

G. Filter Section:

1. Standard filter section shall consist of factory-installed low-velocity, throwaway 2-in. thick fiber-glass filters of commercially available sizes.
2. Filter face velocity shall not exceed 300 fpm at nominal airflows.
3. Filter section shall use only one size filter.
4. Filters shall be accessible through an access panel with ''no-tool'' removal.

H. Controls and Safeties:

1. Unit Controls:
   a. Unit shall be complete with self-contained low-voltage control circuit.
   b. Unit shall incorporate an outdoor coil defrost system to prevent excessive frost accumulation during heating duty, and shall be controlled as follows:
      1) Defrost shall be initiated on the basis of time and coil temperature.
      2) A 30/50/90-minute timer shall activate defrost cycle only if coil temperature is low enough to indicate a heavy frost condition.
      3) Defrost cycle shall terminate when defrost thermostat is satisfied and shall have a positive termination time of 10 minutes.
   c. Unit shall contain high-pressure, loss-of-charge/low-pressure, and freeze protection switches. It shall mount on factory-installed Schrader fittings.
2. Standard Safeties:

   Unit shall incorporate compressor overtemperature and overcurrent safety devices to shut off compressor.

I. Operating Characteristics:

1. Unit shall be capable of starting and running in cooling at 125 F ambient outdoor temperature, meeting maximum load criteria of ARI Standard 210/240 at ±10% voltage.
2. Compressor with standard controls shall be capable of cooling operation down to 25 F ambient outdoor temperature.
3. Compressor shall be capable of operation in heating duty down to –10 F ambient outdoor-air temperature.
4. Unit shall be capable of simultaneous heating duty and defrost cycle operation when using electric heaters indicated in Section L, Special Features.

J. Electrical Requirements:

All unit power wiring shall enter unit cabinet at a single factory-predrilled location.

K. Motors:

1. Compressor motors shall be cooled by refrigerant passing through motor windings and shall have line break thermal and current overload protection.
2. Indoor blower motor shall have permanently lubricated bearings and inherent automatic-reset thermal overload protection.
3. Totally enclosed outdoor-fan motor shall have permanently lubricated bearings, and inherent automatic-reset thermal overload protection.

L. Special Features:

Certain features are not applicable when the features designated by * are specified. For assistance in amending the specifications, your local Carrier Sales Office should be contacted.

* 1. Carrier PremierLink™ Controls:
   a. Shall be available as a factory-installed or as a field-installed accessory.
   b. Shall work with CCN and ComfortVIEW™ software.
   c. Shall be compatible with *Comfort*Link™ controllers.
   d. Shall be ASHRAE 62-99 compliant.
   e. Shall accept a CO_2 sensor in the conditioned space — Demand Control Ventilation (DCV) Ready.
   f. Shall have baud communication rate of 38.4K or faster.
   g. Shall be Internet Ready.
   h. Shall include an integrated economizer controller.

2. Apollo Control:
   a. Shall serve as interface between thermostat, Carrier rooftop unit, and any external field-supplied sensors.
   b. Shall be powered by 24 vac/10 va, supplies thermostat with 10 vdc. This power is supplied by the Carrier rooftop unit, and is factory wired.

3. Roof Curbs:
   a. Formed galvanized steel with wood nailer strip and capable of supporting entire unit weight.
   b. Allows for installing and securing ductwork to curb prior to mounting unit on the curb.

* 4. Integrated Economizers:
   a. Integrated integral-modulating type capable of simultaneous economizer and compressor operation.
   b. Includes all hardware and controls to provide cooling with outdoor air.
   c. Equipped with low-leakage dampers not to exceed 3% leakage at 1 in. wg pressure differential (Durablade economizer).
   d. Capable of introducing up to 100% outdoor air in both minimum and fully open positions.
   e. Equipped with a gravity relief sliding plate damper (Durablade economizer). Damper shall close upon unit shutoff.
   f. EconoMi$er shall be equipped with a barometric relief damper with up to 100% of return air (004-007) or 90% of return air (008-012) relief. The Durablade economizer is equipped with 30% of return-air relief (004-012).
   g. Designed to close damper during loss-of-power situations with emergency power supply (Durablade economizer) or spring return built into motor (EconoMi$er).
   h. Dry bulb outdoor-air temperature sensor shall be provided as standard. Enthalpy control shall be provided as an option.
   i. Durablade economizer is a guillotine-style damper, and the EconoMi$er is a gear-driven, parallel blade design.

   NOTE: EconoMi$er shall also be available with field-installed two-stage power exhaust accessory for vertical or horizontal duct applications.

5. 25% Manual Outdoor-Air Damper:

   Manual damper package shall consist of damper, birdscreen, and rainhood which can be preset to admit up to 25% outdoor air for year-round ventilation.

6. 50% Manual Outdoor-Air Damper:

   Manual damper package shall consist of damper birdscreen, and rainhood which can be preset to admit up to 50% outdoor air for year-round ventilation.

* 7. 100% Two-Position Damper:
   a. Two-position damper package shall include single blade damper. Admits up to 100% outdoor air.
   b. Damper shall close upon indoor fan shutoff.
   c. Designed to close damper during loss of power situations.
   d. Equipped with barometric relief damper.

* 8. 25% Two-Position Damper:
   a. Two-position damper package shall include single blade damper and motor. Admits up to 25% outdoor air.
   b. Damper shall close upon indoor fan shutoff.

* 9. Solid-State Enthalpy Control:
   a. For use with Durablade economizer package only.
   b. Capable of sensing outdoor-air enthalpy content (temperature and humidity) and controlling economizer cut-in point to have minimum heat content air passing over the indoor coil for most efficient system operation.

Guide specifications — 50TFQ units (cont)

*10. Differential Enthalpy Sensor:
   a. For use with economizer only.
   b. Capable of comparing enthalpy content (temperature and humidity) of outdoor and indoor air and controlling economizer cut-in point at the most economical level.

*11. Electric Resistance Heaters:
   a. Open wire nichrome elements with all necessary safety operating controls.
   b. UL listed and indicated on basic unit informative plate.
   c. Available in multiples to match heating requirements.
   d. Single point kits available for each heater when required.

*12. Head Pressure Control Packages:

   Consists of solid-state control and outdoor-coil temperature sensor to maintain condensing temperature between 90 F and 110 F at outdoor ambient temperatures down to –20 F by outdoor fan speed modulation or outdoor fan cycling.

*13. Thermostat and Subbase:

   Provides staged cooling and heating automatic (or manual) changeover, fan control, and indicator light.

14. Thru-The-Bottom Service Connections:

   Kit shall provide connectors to permit electrical connections to be brought to the unit through the basepan.

*15. Electronic Programmable Thermostat:

   Capable of using deluxe full-featured electronic thermostat. Shall use built-in compressor cycle delay control for both heating and cooling duty. Capable of working with Carrier direct digital controls.

16. Energy$Recycler:

   The package shall be an outdoor rooftop or surface mounted, electronically controlled, air-to-air heat pump unit utilizing a hermetic compressor for cooling and heating duty.

   The Energy$Recycler shall recover energy from building exhaust air and pre-condition ventilation air to allow higher ventilation requirements and minimizing energy cost.

   This option shall be available with the following:

   a. A mounting kit for the Energy$Recycler for cantilever mounting off of the rooftop unit with out the use of a slab or a roof curb.
   b. A supplementary supply air fan kit to provide increased air movement into the 62AQ unit.
   c. A field-installed 460v to 308/230v transformer to provide power when the Energy$Recycler is used with a 460V rooftop unit.

17. EconoMi$er and Power Exhaust:

   Package shall provide control of internal building pressure. The two-stage system shall exhaust up to 100% of return air (vertical only).

18. Two-Stage Power Exhaust Accessory for EconoMi$er:

   Power exhaust shall be used in conjunction with EconoMi$er to provide system exhaust of up to 100% of return air. The power exhaust is a field-installed accessory (vertical and horizontal applications).

   The individual fans are energized through the end switches located in the actuator, which will open as the outdoor-air damper opens. These end switches are factory set for 30 and 70% of outdoor-air, and can be set to meet specific job requirements.

19. Outdoor Air Enthalpy Sensor:

   The outdoor air enthalpy sensor shall be used with the EconoMi$er device to provide single enthalpy control. When used in conjunction with a return air enthalpy sensor, the EconoMi$er device will provide differential enthalpy control. The sensor allows the EconoMi$er controller to determine if outside air is suitable for free cooling.

20. Return Air Enthalpy Sensor:

   The return air enthalpy sensor shall be used with the EconoMi$er device. When used in conjunction with an outdoor air enthalpy sensor, the EconoMi$er device will provide differential enthalpy control.

21. Return Air Temperature Sensor:

   The return air temperature sensor shall be used with the EconoMi$er device. When used in conjunction with the standard outdoor air temperature sensor, the EconoMi$er device will provide differential temperature control.

22. Indoor Air Quality (CO_2) Sensor:
   a. Shall have the ability to provide demand ventilation indoor air quality (IAQ) control through the economizer with an IAQ sensor.
   b. The IAQ sensor shall be available in duct mount, wall mount, and wall mount with LED display. The set point shall have adjustment capability.

23. Power Exhaust Auxiliary Transformer:

   Field-installed 460v or 575v to 230v transformer to provide power to the 230v power exhaust when attached to a 460v or 575v rooftop unit.

24. Outdoor Coil Hail Guard Assembly:

   Hail guard shall protect against damage from hail and flying debris.

25. Alternate Motors and/or Drives (004-006, 008, 012):

    Alternate motors and drives shall be factory-installed to provide additional performance range.

26. High-Static Motor(s) and Drive(s) (50TFQ004-012):

    High-static motor(s) and drive(s) shall be factory-installed to provide an additional performance range.

27. Outdoor Coil Grille:

    The grille protects the outdoor coil from damage by large objects without increasing unit clearances.

28. Compressor Cycle Delay:

    Unit shall be prevented from restarting for a minimum of 5 min. after shutdown.

29. Salt Spray Protection Package (008-012):

    Coil guard protects coil from corrosion in coastal areas and in areas with high sulfur emissions.

30. Fan/Filter Status Switch:

    Provides status of evaporator fan (ON/OFF) or filter (CLEAN/DIRTY). Status shall be displayed over communication bus when used with direct digital controls or with an indicator light at the thermostat.

31. Unit Mounted Disconnect Switch:

    Shall be factory-installed. Internally mounted, NEC and UL approved non-fused switch provides unit power shutoff. Shall be accessible from outside the unit.

32. Convenience Outlet:

    Shall be factory-installed and internally mounted with easily accessible 115-v female receptacle. Shall include 15 amp GFI receptacle with independent fuse protection. Voltage required to operate convenience outlet shall be provided by a factory-installed step-down transformer. Shall be accessible from outside the unit.

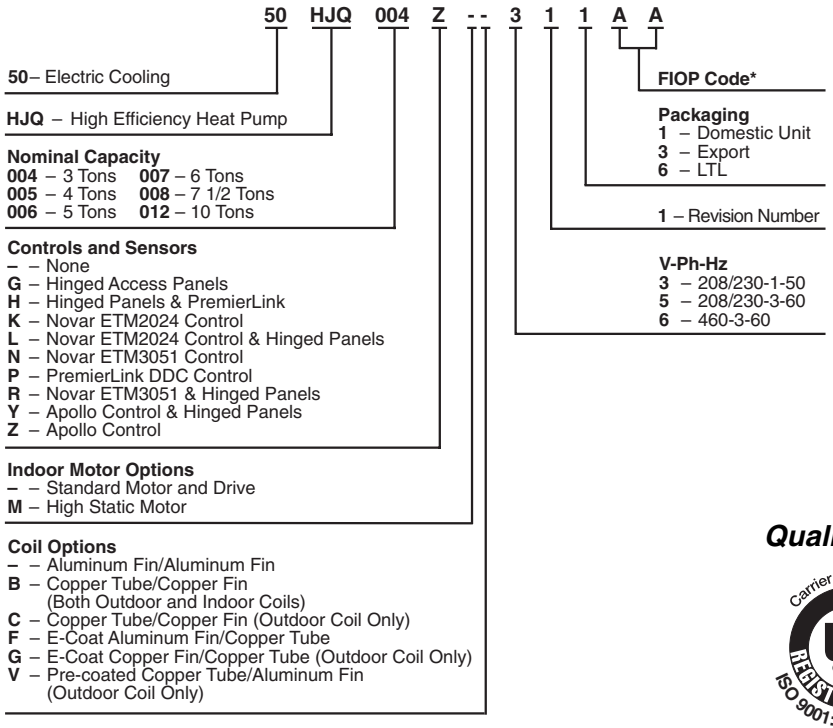
33. Emergency Heat Package:

    When mechanical heating is locked out, auxiliary heat shall be activated when necessary.

34. Ultra-Violet Germicidal Lamps:

    Ultra-violet germicidal lamps are designed to eliminate odor causing mold and fungus that may develop in the wet area of the evaporator section of the unit. The high output, low temperature germicidal lamps are field installed in the evaporator section of the unit, aimed at the evaporator coil and condensate pan. The short wave-length ultra-violet light inhibits and kills mold, fungus and microbial growth. The lamps have an output rating at 45 F in 400 fpm airflow of 120 microwatts/cm^2 at 1 meter.

Model number nomenclature


50 HJQ 004 Z - - 3 1 1 A A
50– Electric Cooling
HJQ – High Efficiency Heat Pump
Nominal Capacity
004 – 3 Tons 007 – 6 Tons
005 – 4 Tons 008 – 7 1/2 Tons
006 – 5 Tons 012 – 10 Tons
Controls and Sensors
– – None
G – Hinged Access Panels
H – Hinged Panels & PremierLink
K – Novar ETM2024 Control
L – Novar ETM2024 Control & Hinged Panels
N – Novar ETM3051 Control
P – PremierLink DDC Control
R – Novar ETM3051 & Hinged Panels
Y – Apollo Control & Hinged Panels
Z – Apollo Control
Indoor Motor Options
– – Standard Motor and Drive
M – High Static Motor
Coil Options
– – Aluminum Fin/Aluminum Fin
B – Copper Tube/Copper Fin (Both Outdoor and Indoor Coils)
C – Copper Tube/Copper Fin (Outdoor Coil Only)
F – E-Coat Aluminum Fin/Copper Tube
G – E-Coat Copper Fin/Copper Tube (Outdoor Coil Only)
V – Pre-coated Copper Tube/Aluminum Fin (Outdoor Coil Only)
V-Ph-Hz
3 – 208/230-1-50
5 – 208/230-3-60
6 – 460-3-60
1 – Revision Number
Packaging
1 – Domestic Unit
3 – Export
6 – LTL
FIOP Code*

Quality Assurance

Carrier Corporation
UL REGISTERED FIRM
ISO 9001:2000 #A2325

*Refer to 50HJQ Price Pages for FIOP (factory-installed option) code table.

ARI* capacity ratings

50HJQ004-006

UNIT 50HJQ	NOMINAL TONS	COOLING		HEATING (High Temp)		SOUND RATING (Bels)
		Cap. (Btuh)	SEER†	Cap. (Btuh)	HSPF†	
004	3	36,000	12.0	34,000	7.6	7.6
005	4	46,000	12.0	46,000	7.6	7.6
006	5	60,000	11.9	60,000	7.6	8.0

50HJQ007-012

UNIT 50HJQ	NOMINAL TONS	COOLING		HEATING (High)		HEATING (Low)		SOUND RATING (Bels)	IPLV
		Cap. (Btuh)	EER	Cap. (Btuh)	COP	Cap. (Btuh)	COP		
007	6	71,000	10.5	69,000	3.4	37,000	2.2	8.0	—
008	7 1/2	88,000	10.3	85,000	3.3	48,000	2.2	8.2	—
012	10	116,000	10.3	114,000	3.3	64,000	2.2	8.4	10.4

LEGEND

Bels — Sound Levels (1 bel = 10 decibels)
Cap. — Net Capacity (Btuh)
COP — Coefficient of Performance
EER — Energy Efficiency Ratio
HSPF — Heating Seasonal Performance Factor
IPLV — Integrated Part-Load Values
SEER — Seasonal Energy Efficiency Ratio

*Air Conditioning and Refrigeration Institute.
†Applies only to units with capacity of 60,000 Btuh or less.

NOTE:
Rated in accordance with ARI Standard 210/240-95 and 270-95. Ratings are net values, reflecting effects of circulating fan heat. Supplementary electric heat is not included. Ratings based on:

Cooling Standard: 80 F db (dry bulb), 67 F wb (wet bulb) indoor entering-air temperature and 95 F db outdoor entering-air temperature.

IPLV Standard: 80 F db, 67 F wb indoor entering-air temperature and 80 F db outdoor entering-air temperature.

High-Temp Heating Standard: 70 F db indoor entering-air temperature and 47 F db, 43 F wb outdoor entering-air temperature.

Low-Temp Heating Standard: 70 F db indoor entering-air temperature and 17 F db, 15 F wb outdoor entering-air temperature.

ALL the 50HJQ and 50TFQ004,005 and 006 units are in compliance with ASHRAE 90.1 2001 Energy Standard for minimum SEER and EER requirements. Refer to state and local codes or visit the following website: http://solstice.crest.org/efficiency/bcap to determine if compliance with this standard pertains to a given geographical area of the United States.

California, Maryland, Washington, Wyoming, Massachusetts and various local and state building codes adopted the ASHRAE 90.1 efficiency standard on October 29, 2001.

Physical data — 50HJQ004-007

BASE UNIT 50HJQ	004	005	006	007
NOMINAL CAPACITY (tons)	3	4	5	6
OPERATING WEIGHT (lb)				
Unit	500	550	590	630
Durablade Economizer	34	34	34	34
EconoMi$er	47	47	47	47
Roof Curb	115	115	115	115
COMPRESSOR	Scroll			
Quantity	1	1	1	1
Oil (oz)	42	53	50	60
REFRIGERANT TYPE	R-22			
Operating Charge (lb)	6.9	9.6	10.8	17.7
OUTDOOR FAN	Propeller			
Quantity...Diameter (in.)	1...22	1...22	1...22	1...22
Nominal Cfm	3500	3500	3500	3500
Motor Hp...Rpm	1/8...825	1/8...825	1/4...1100	1/4...1100
OUTDOOR COIL	Enhanced Copper Tubes, Aluminum Fins, Acutrol™ Metering Device			
Rows...Fins/in.	1...17	2...17	2...17	2...17
Total Face Area (sq ft)	14.58	16.53	16.53	16.53
INDOOR FAN	Centrifugal			
Size (in.)	10 x 10	10 x 10	10 x 10	10 x 10
Type Drive	Belt	Belt	Belt	Belt
Nominal Cfm	1200	1600	2000	2400
Maximum Continuous Bhp	1.20	1.20	1.80	2.40
Motor Frame	48	48	48	56
Fan Rpm	760-1090	840-1185	1020-1460	1120-1585
Motor Bearing Type	Ball	Ball	Ball	Ball
Maximum Fan Rpm	1725	1725	1725	1725
Motor Pulley Pitch Diameter A/B (in.)	1.9/2.9	1.9/2.9	2.4/3.4	2.4/3.4
Fan Pulley Pitch Diameter (in.)	4.5	4.0	4.0	3.7
Belt — Type...Length (in.)	A...33	A...33	A...38	A...38
Pulley Center Line Distance (in.)	10.0-12.4	10.0-12.4	14.7-15.5	14.7-15.5
Speed Change per Full Turn of Movable Pulley Flange (rpm)	65	70	93	93
Movable Pulley Maximum Full Turns From Closed Position	5	5	6	5
Factory Setting Full Turns Open	3	3	3	3
Factory Speed Setting (rpm)	890	980	1240	1305
Fan Shaft Diameter at Pulley (in.)	5/8	5/8	5/8	5/8
INDOOR COIL	Enhanced Copper Tubes, Aluminum Double Wavy Fins, Acutrol Metering Device			
Rows...Fins/in.	2...15	2...15	4...15	4...15
Total Face Area (sq ft)	5.5	5.5	5.5	5.5
HIGH-PRESSURE SWITCH (psig)				
Standard Compressor Internal Relief	625			
Cutout	428			
Reset (Auto.)	320			
LOSS-OF-CHARGE/LOW-PRESSURE SWITCH (Liquid Line) (psig)				
Cutout	7 ± 3			
Reset (Auto.)	22 ± 5			
FREEZE PROTECTION THERMOSTAT				
Opens (F)	30			
Closes (F)	45			
OUTDOOR-AIR INLET SCREENS	Cleanable			
Quantity...Size (in.)	1...20 x 24 x 1			
RETURN-AIR FILTERS	Throwaway			
Quantity...Size (in.)	2...16 x 25 x 2			

LEGEND

Bhp — Brake Horsepower

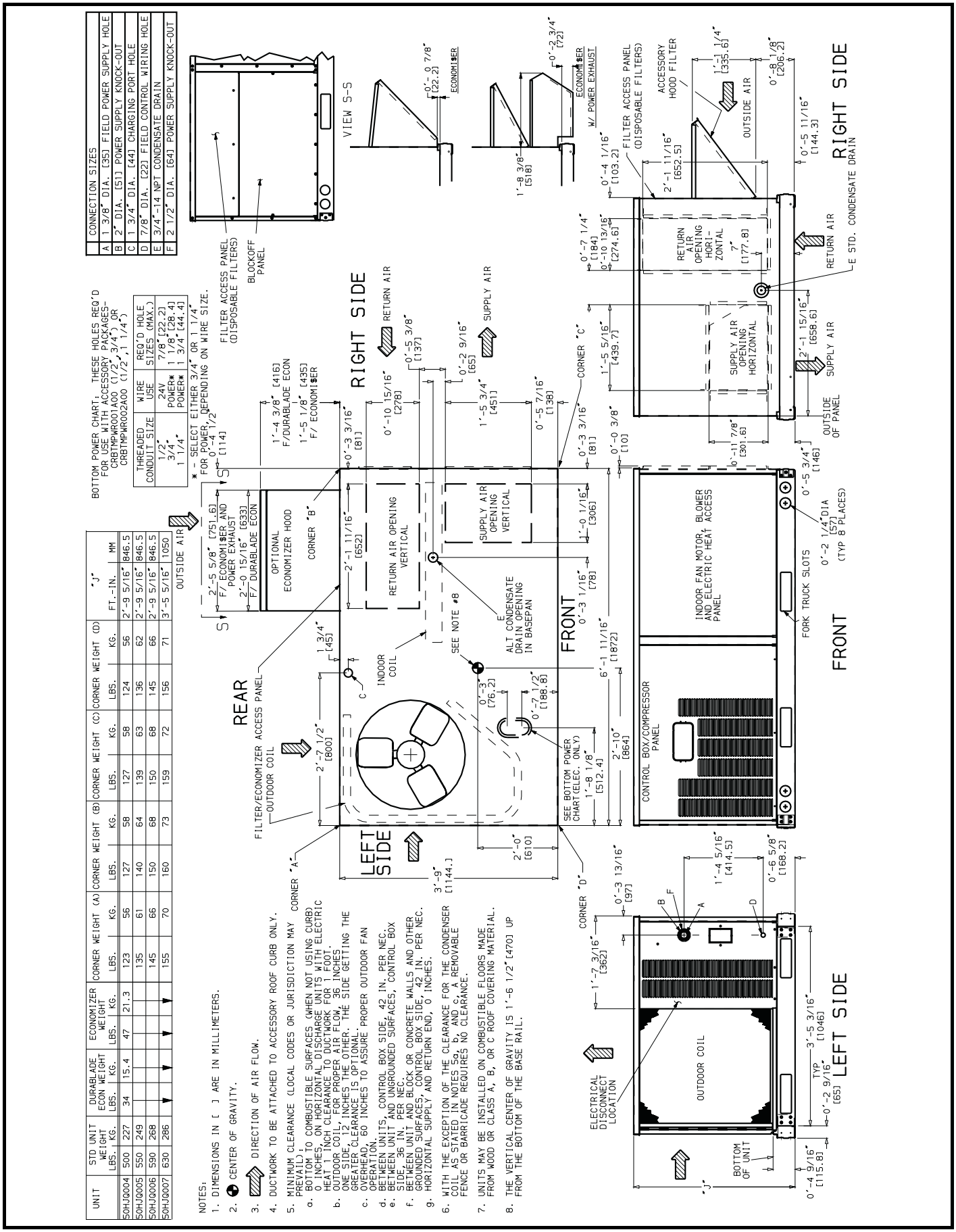
Physical data — 50HJQ008,012

BASE UNIT 50HJQ	008	012
NOMINAL CAPACITY (tons)	7 1/2	10
OPERATING WEIGHT (lb)		
Unit	870	1000
Durablade Economizer	44	44
EconoMi$er	62	62
Roof Curb	223	223
COMPRESSOR	Scroll	
Quantity	2	2
Oil (oz) (each compr)	57	57
REFRIGERANT TYPE	R-22	
Operating Charge (lb)		
Circuit 1	9.1	10.6
Circuit 2	9.6	9.9
OUTDOOR FAN	Propeller	
Quantity...Diameter (in.)	2...22	2...22
Nominal Cfm	6500	6500
Motor Hp...Rpm	1/4...1100	1/4...1100
OUTDOOR COIL	Enhanced Copper Tubes, Aluminum Fins, Acutrol™ Metering Device	
Rows...Fins/in.	2...17	2...17
Total Face Area (sq ft)	20.5	25.1
INDOOR FAN	Centrifugal	
Size (in.)	15 x 15	15 x 15
Type Drive	Belt	Belt
Nominal Cfm	3000	4000
Maximum Continuous Bhp	2.90	4.20
Motor Frame	56	56
Fan Rpm Range	725-925	860-1080
Motor Bearing Type	Ball	Ball
Maximum Fan Rpm	1725	2100
Motor Pulley Pitch Diameter		
A/B (in.)	3.4/4.4	4.0/5.0
Fan Pulley Pitch Diameter (in.)	8.0	8.0
Belt — Type...Length (in.)	A...51	A...51
Pulley Center Line Distance (in.)	16.75-19.25	15.85-17.50
Fan Shaft Diameter at Pulley (in.)	1	1
Speed Change per Full Turn of Movable Pulley Flange (rpm)	50	45
Movable Pulley Maximum Full Turns from Closed Position	5	5
Factory Setting — Full Turns Open	5	5
Factory Speed Setting (rpm)	725	860
INDOOR COIL	Enhanced Copper Tubes, Aluminum Double Wavy Fins, Acutrol Metering Device	
Rows...Fins/in.	3...15	4...15
Total Face Area (sq ft)	8.89	11.11
HIGH-PRESSURE SWITCH (psig)		
Standard Compressor Internal Relief	625	
Cutout	428	
Reset (Auto.)	320	
LOSS-OF-CHARGE/LOW-PRESSURE SWITCH (Liquid Line) (psig)		
Cutout	7 ± 3	
Reset (Auto.)	22 ± 5	
FREEZE PROTECTION THERMOSTAT		
Opens (F)	30	
Closes (F)	45	
OUTDOOR-AIR INLET FILTER	Cleanable	
Quantity...Size (in.)	1...20 x 25 x 1 1...16 x 25 x 1	
RETURN-AIR FILTERS	Throwaway	
Quantity...Size (in.)	4...16 x 20 x 2	4...20 x 20 x 2

LEGEND

Bhp — Brake Horsepower

Base unit dimensions — 50HJQ004-007


NOTES:
1. DIMENSIONS IN [ ] ARE IN MILLIMETERS.
2. CENTER OF GRAVITY.
3. DIRECTION OF AIR FLOW.
4. DUCTWORK TO BE ATTACHED TO ACCESSORY ROOF CURB ONLY.
5. MINIMUM CLEARANCE (LOCAL CODES OR JURISDICTION MAY PREVAIL):
a. BOTTOM TO COMBUSTIBLE SURFACES (WHEN NOT USING CURB) 0 INCHES, ON HORIZONTAL DISCHARGE UNITS WITH ELECTRIC HEAT 1 INCH CLEARANCE TO DUCTWORK FOR 1 FOOT.
b. OUTDOOR COIL, FOR PROPER AIR FLOW, 36 INCHES ONE SIDE, 12 INCHES THE OTHER. THE SIDE GETTING THE GREATER CLEARANCE IS OPTIONAL.
c. OVERHEAD, 60 INCHES TO ASSURE PROPER OUTDOOR FAN OPERATION.
d. BETWEEN UNITS, CONTROL BOX SIDE, 42 IN. PER NEC.
e. BETWEEN UNIT AND UNGROUNDED SURFACES, CONTROL BOX SIDE 36 IN. PER NEC.
f. BETWEEN UNIT AND BLOCK OR CONCRETE WALLS AND OTHER GROUNDED SURFACES, CONTROL BOX SIDE, 42 IN. PER NEC.
g. HORIZONTAL SUPPLY AND RETURN END, 0 INCHES.
6. WITH THE EXCEPTION OF THE CLEARANCE FOR THE CONDENSER COIL AS STATED IN NOTES 5a AND c, A REMOVABLE FENCE OR BARRICADE REQUIRES NO CLEARANCE.
7. UNITS MAY BE INSTALLED ON COMBUSTIBLE FLOORS MADE FROM WOOD OR CLASS A, B, OR C ROOF COVERING MATERIAL.
8. THE VERTICAL CENTER OF GRAVITY IS 1'-6 1/2" [470] UP FROM THE BOTTOM OF THE BASE RAIL.
BOTTOM POWER CHART: THESE HOLES REQ'D FOR USE WITH ACCESSORY PACKAGES- CRBTMPWR001A00 (1/2", 3/4") OR CRBTMPWR002A00 (1/2", 1 1/4")
THREADED CONDUIT SIZE
WIRE USE
REQ'D HOLE SIZES (MAX.)
1/2", 3/4", 1 1/4"
24V
POWER* 7/8" [22.2]
POWER* 1 3/4" [44.4]
* - SELECT EITHER 3/4" OR 1 1/4" FOR POWER, DEPENDING ON WIRE SIZE.
CONNECTION SIZES
A 1 3/8" DIA. [35] FIELD POWER SUPPLY HOLE
B 2" DIA. [51] POWER SUPPLY KNOCK-OUT
C 1 3/4" DIA. [44] CHARGING PORT HOLE
D 7/8" DIA. [22] FIELD CONTROL WIRING HOLE
E 3/4"-14 NPT CONDENSATE DRAIN
F 2 1/2" DIA. [64] POWER SUPPLY KNOCK-OUT
FILTER ACCESS PANEL (DISPOSABLE FILTERS)
BLOCKOFF PANEL
VIEW S-S
ECONOMISER
ECONOMISER W/ POWER EXHAUST
ACCESSORY HOOD FILTER
OUTSIDE AIR
RETURN AIR
SUPPLY AIR
REAR
RIGHT SIDE
LEFT SIDE
FRONT
FILTER/ECONOMIZER ACCESS PANEL
OUTDOOR COIL
OPTIONAL ECONOMIZER HOOD
CORNER "B"
INDOOR COIL
SEE NOTE #8
ALT CONDENSATE DRAIN OPENING IN BASEPAN
SUPPLY AIR OPENING VERTICAL
RETURN AIR OPENING VERTICAL
SEE BOTTOM POWER CHART(ELEC. ONLY)
CONTROL BOX/COMPRESSOR PANEL
INDOOR FAN MOTOR, BLOWER AND ELECTRIC HEAT ACCESS PANEL
FORK TRUCK SLOTS
OUTSIDE OF PANEL
RETURN AIR OPENING HORIZONTAL
SUPPLY AIR OPENING HORIZONTAL
E STD. CONDENSATE DRAIN
OUTDOOR COIL
ELECTRICAL DISCONNECT LOCATION
BOTTOM OF UNIT
CORNER "A"
CORNER "C"
CORNER "D"
TYP
FILTER ACCESS PANEL (DISPOSABLE FILTERS)
OUTSIDE AIR
SUPPLY AIR
RETURN AIR

UNIT	STD UNIT WEIGHT		DURABLADE ECON WEIGHT		ECONOMIZER WEIGHT		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		"J"	
	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	FT.-IN.	MM
50HJQ004	500	227	34	15.4	47	21.3	123	56	127	58	127	58	124	56	2'-9 5/16"	846.5
50HJQ005	550	249					135	61	140	64	139	63	136	62	2'-9 5/16"	846.5
50HJQ006	590	268					145	66	150	68	150	68	145	66	2'-9 5/16"	846.5
50HJQ007	630	286	▼	▼	▼	▼	155	70	160	73	159	72	156	71	3'-5 5/16"	1050

50HJQ004-012

Base unit dimensions — 50HJQ008,012

50HJQ004-012

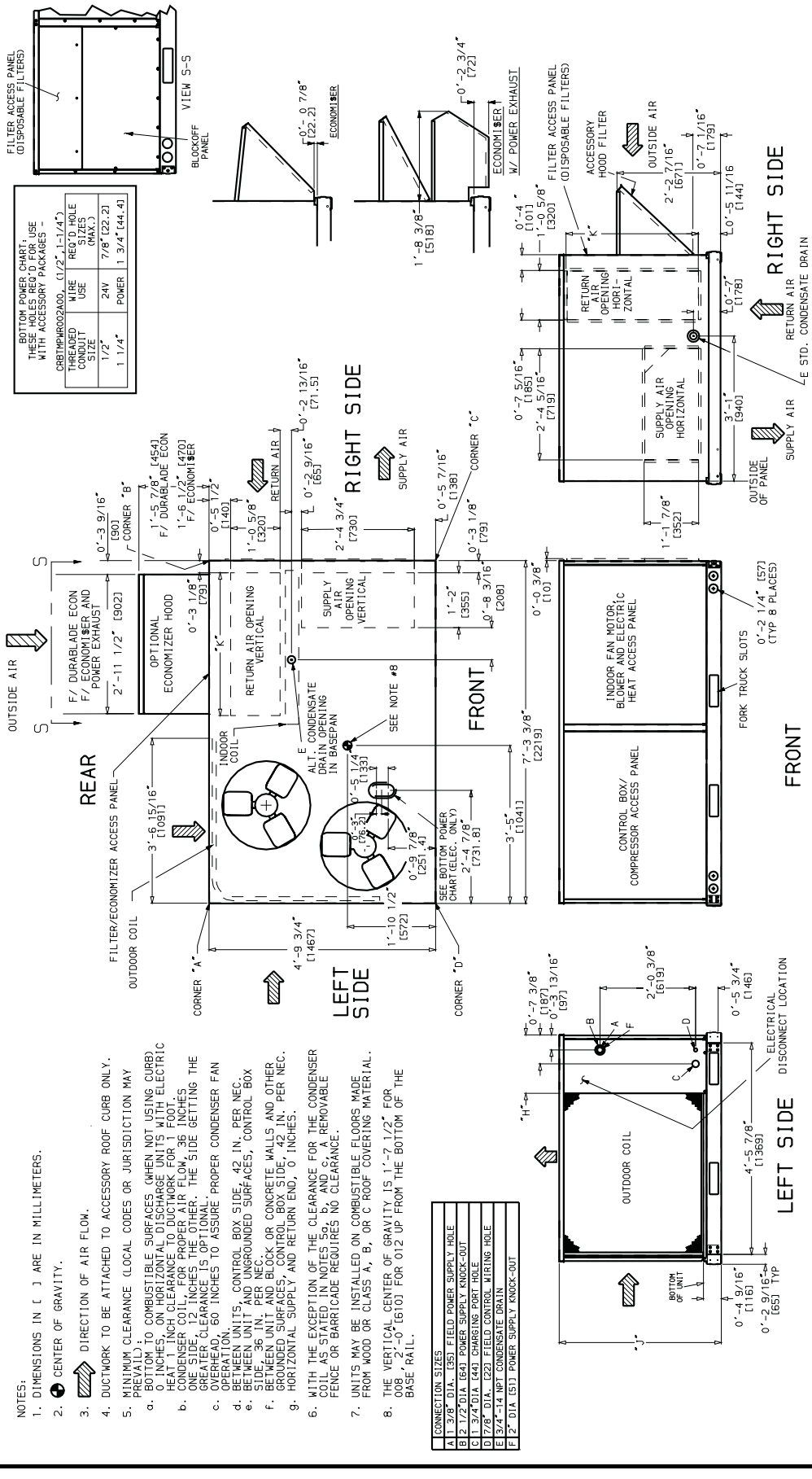
UNIT	STD. UNIT WEIGHT		DURABLADE ECON WEIGHT		ECONOMI$ER WEIGHT		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		"H"		"J"		"K"	
	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	FT.-IN.	MM	FT.-IN.	MM	FT.-IN.	MM
50HJQ008	870	395	44	20	62	28	198	90	183	83	237	108	252	114	2'-0 7/8"	632	3'-5 5/16"	1050	2'-9 11/16"	856
50HJQ012	1000	454	▼	▼	▼	▼	231	105	214	97	269	122	286	130	2'-10 7/8"	885	4'-1 5/16"	1253	3'-0 3/8"	924

NOTES:
1. DIMENSIONS IN [ ] ARE IN MILLIMETERS.
2. ◔ CENTER OF GRAVITY.
3. ⇨ DIRECTION OF AIR FLOW.
4. DUCTWORK TO BE ATTACHED TO ACCESSORY ROOF CURB ONLY.
5. MINIMUM CLEARANCE (LOCAL CODES OR JURISDICTION MAY PREVAIL):
   a. BOTTOM TO COMBUSTIBLE SURFACES (WHEN NOT USING CURB) 0 INCHES ON HORIZONTAL DISCHARGE UNITS WITH ELECTRIC HEAT. NO CLEARANCE TO DUCTWORK FOR 36 INCHES.
   b. CONDENSER COIL CLEARANCE FOR PROPER AIR FLOW. ONE SIDE 12 INCHES THE OTHER 36 INCHES. THE SIDE GETTING THE GREATER CLEARANCE IS OPTIONAL.
   c. OVERHEAD, 60 INCHES TO ASSURE PROPER CONDENSER FAN OPERATION.
   d. BETWEEN UNITS, CONTROL BOX SIDE, 42 IN. PER NEC.
   e. BETWEEN UNIT AND UNGROUNDED SURFACES, CONTROL BOX SIDE, 36 IN. PER NEC.
   f. BETWEEN UNIT AND BLOCK OR CONCRETE WALLS AND OTHER GROUNDED SURFACES, CONTROL BOX SIDE, 42 IN. PER NEC.
   g. HORIZONTAL SUPPLY AND RETURN END, 0 INCHES.
6. WITH THE EXCEPTION OF THE CLEARANCE FOR THE CONDENSER COIL AS STATED IN NOTES 5a, b, AND c, A REMOVABLE FENCE OR BARRICADE REQUIRES NO CLEARANCE.
7. UNITS MAY BE INSTALLED ON COMBUSTIBLE FLOORS MADE FROM WOOD OR CLASS A, B, OR C ROOF COVERING MATERIAL.
8. THE VERTICAL CENTER OF GRAVITY IS 1'-7 1/2" FOR 008 & 2'-0" [610] FOR 012 UP FROM THE BOTTOM OF THE BASE RAIL.

	CONNECTION SIZES
A	1 3/8" DIA. [35] FIELD POWER SUPPLY HOLE
B	2 1/2"DIA [64] POWER SUPPLY KNOCK-OUT
C	1 3/4"DIA [44] CHARGING PORT HOLE
D	7/8" DIA. [22] FIELD CONTROL WIRING HOLE
E	3/4"-14 NPT CONDENSATE DRAIN
F	2" DIA. [51] POWER SUPPLY KNOCK-OUT

BOTTOM POWER CHART.
THESE HOLES REQ'D FOR USE WITH ACCESSORY PACKAGES -
CRBTMPWR002A00, (1/2",1-1/4").

THREADED CONDUIT SIZE	WIRE USE	REQ'D HOLE SIZES (MAX.)
1/2"	24V	7/8" [22.2]
1 1/4"	POWER	1 3/4" [44.4]

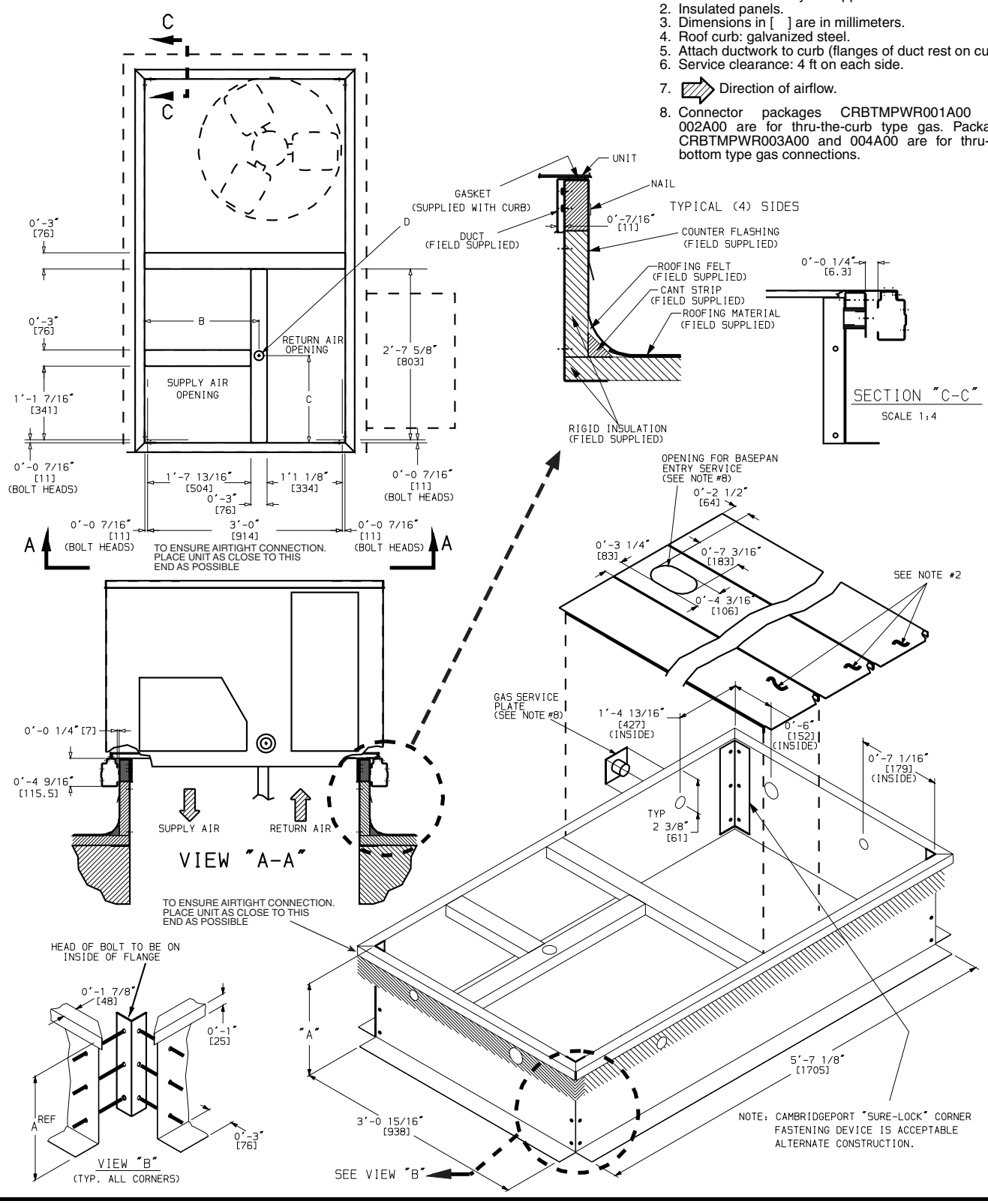


Accessory dimensions — 50HJQ004-007

CONNECTOR PKG. ACCY.	B	C	D ALT DRAIN HOLE	GAS	POWER	CONTROL
CRBTMPWR001A00	1′-9 11/16″ [551]	1′-4″ [406]	1 3/4″ [44.5]	3/4″ [19] NPT	3/4″ [19] NPT	1/2″ [12.7]
CRBTMPWR002A00					1 1/4″ [31.7]	
CRBTMPWR003A00				1/2″ [12.7] NPT	3/4″ [19] NPT	1/2″ [12.7]
CRBTMPWR004A00				3/4″ [19] NPT	1 1/4″ [31.7]	

ROOF CURB ACCESSORY	A	UNIT SIZE
CRRFCURB001A00	1′-2″ [356]	50HJQ004-007
CRRFCURB002A00	2′-0″ [610]	

NOTES:
1. Roof curb accessory is shipped disassembled.
2. Insulated panels.
3. Dimensions in [ ] are in millimeters.
4. Roof curb: galvanized steel.
5. Attach ductwork to curb (flanges of duct rest on curb).
6. Service clearance: 4 ft on each side.
7. Direction of airflow.
8. Connector packages CRBTMPWR001A00 and 002A00 are for thru-the-curb type gas. Packages CRBTMPWR003A00 and 004A00 are for thru-the-bottom type gas connections.

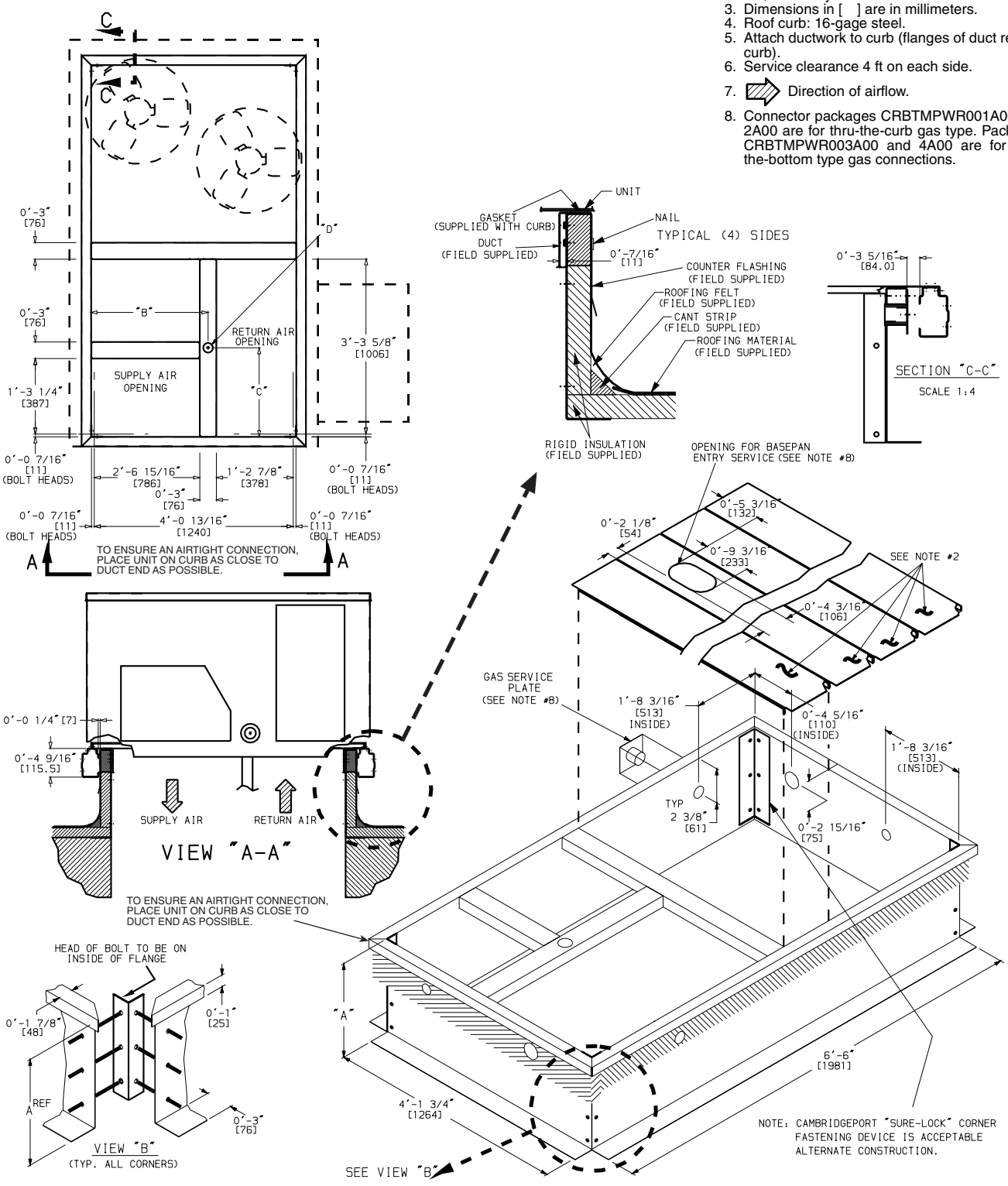


Accessory dimensions — 50HJQ008-012

CONNECTOR PKG. ACCY.	B	C	D ALT DRAIN HOLE	GAS	POWER	CONTROL
CRBTMPWR001A00	2′-8 7/16″ [827]	1′-10 15/16″ [583]	1 3/4″ [44.5]	3/4″ [19] NPT	3/4″ [19] NPT	1/2″ [12.7] NPT
CRBTMPWR002A00					1 1/4″ [31.7]	
CRBTMPWR003A00				1/2″ [12.7] NPT	3/4″ [19] NPT	1/2″ [12.7] NPT
CRBTMPWR004A00				3/4″ [19] NPT	1 1/4″ [31.7]	

ROOF CURB ACCESSORY	"A"	UNIT SIZE 50HJQ
CRRFCURB003A00	1′-2″ [356]	008-012
CRRFCURB004A00	2′-0″ [610]	

NOTES:
1. Roof curb accessory is shipped disassembled.
2. Insulated panels: 1-in. thick polyurethane foam, 1 3/4 lb density.
3. Dimensions in [ ] are in millimeters.
4. Roof curb: 16-gage steel.
5. Attach ductwork to curb (flanges of duct rest on curb).
6. Service clearance 4 ft on each side.
7. Direction of airflow.
8. Connector packages CRBTMPWR001A00 and 2A00 are for thru-the-curb gas type. Packages CRBTMPWR003A00 and 4A00 are for thru-the-bottom type gas connections.



Selection procedure (with 50HJQ005 example)

I Determine cooling and heating requirements at design conditions:

Given:

Required Cooling Capacity (TC) . . . . .38,000 Btuh
Sensible Heat Capacity (SHC). . . . . .24,000 Btuh
Required Heating Capacity. . . . . .35,000 Btuh
Outdoor Entering-Air Temperature . . . . . .95 F
Outdoor-Air Winter Design Temperature . . . . . 0° F
Indoor-Air Winter Design Temperature . . . . . .70 F
Indoor Entering-Air
Temperature . . . 80 F edb (entering air, dry bulb), 67 F ewb (entering air, wet bulb)
Indoor-Air Quantity . . . . . 1600 cfm
External Static Pressure . . . . . 0.45 in. wg
Electrical Characteristics (V-Ph-Hz) 230-3-60

II Select unit based on required cooling capacity.

Enter Cooling Capacities table at outdoor entering temperature of 95 F, indoor air entering at 1600 cfm and 67 F ewb. The 50HJQ005 unit will provide a total cooling capacity of 47,400 Btuh and a sensible heat capacity of 32,800 Btuh.

For indoor-air temperature other than 80 F edb, calculate sensible heat capacity correction, as required, using the formula found in Note 3 following the cooling capacities tables.

NOTE: Unit ratings are gross capacities and do not include the effect of indoor-fan motor heat. To calculate net capacities, see Step V.

III Select electric heat.

Enter the Instantaneous and Integrated Heating Ratings table at 1600 cfm. At 70 F return indoor air and 0° F air entering outdoor coil, the integrated heating capacity is 20,400 Btuh. (Select integrated heating capacity value since deductions for outdoor-coil frost and defrosting have already been made. No correction is required.)

The required heating capacity is 35,000 Btuh. Therefore, 14,600 Btuh (35,000 – 20,400) additional electric heat is required.

Determine additional electric heat capacity in kW.

$$\frac{14{,}600 \text{ Btuh}}{3413 \text{ Btuh/kW}} = 4.3 \text{ kW of heat required.}$$

Enter the Electric Heating Capacities table for 50HJQ005 at 208/230, 3 phase. The 6.5-kW heater at 240 v most closely satisfies the heating required. To calculate kW at 230 v, use the Multiplication Factors table.

6.5 kW x .92 = 5.98 kW
6.5 kW x .92 x 3413 = 20,410 Btuh

Total unit heating capacity is 40,810 Btuh (20,400 + 20,410).

IV Determine fan speed and power requirements at design conditions.

Before entering Fan Performance tables, calculate the total static pressure required based on unit components. From the given and the Pressure Drop tables, find:

External static pressure	.45 in. wg
Durablade economizer	.05 in. wg
Electric heat	.09 in. wg
Total static pressure	.59 in. wg

Enter the Fan Performance table for 50HJQ005 vertical discharge. At 1600 cfm and 230-v, the standard motor will deliver 1.2 in. wg static pressure and 1.15 brake horsepower (bhp). This will adequately handle job requirements.

NOTE: Convert bhp to Watts using the formula found in the note following the Indoor-Fan Motor Efficiency table.

For this example:

$$\text{Watts} = \frac{746 \times \text{Bhp}}{\text{Motor Efficiency}}$$

$$\text{Watts} = \frac{746 \times 1.15}{.75}$$

Watts = 1144

V Determine net capacities.

Capacities are gross and do not include the effect of indoor-fan motor (IFM) heat.

Determine net cooling capacity as follows:

Net capacity = Total capacity – IFM heat
= 47,400 Btuh – (1144 Watts x 3.413 Btuh/Watts)
= 47,400 Btuh – 3904 Btuh
= 43,496

Net sensible capacity = 32,800 Btuh – 3904 Btuh
= 28,896 Btuh

Integrated heating capacity is maximum (instantaneous) capacity less the effect of frost on the outdoor coil and the heat required to defrost it. Therefore, net capacity is equal to 40,810 Btuh, the total heating capacity determined in Step III.

Performance data

COOLING CAPACITIES

50HJQ004 (3 Tons)

Temp (F) Outdoor Entering Air (Edb)		Indoor Entering Air — Cfm/Bf								
		900/0.13			1200/0.17			1500/0.19		
		Indoor Entering Air — Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	41.7	38.4	34.1	43.2	40.3	37.3	44.4	41.4	36.8
	SHC	20.3	25.0	29.0	21.9	28.0	33.7	23.2	30.6	36.8
	kW	2.22	2.17	2.13	2.23	2.20	2.17	2.25	2.21	2.18
85	TC	40.5	37.2	32.4	42.1	39.0	36.0	43.1	40.2	37.2
	SHC	19.9	24.6	28.1	21.6	27.8	33.2	23.1	30.5	36.3
	kW	2.49	2.45	2.40	2.51	2.48	2.44	2.53	2.49	2.45
95	TC	39.1	35.9	30.6	40.8	37.6	33.9	42.0	38.7	35.8
	SHC	19.4	24.1	27.2	21.2	27.4	32.2	23.0	30.2	35.8
	kW	2.80	2.75	2.69	2.82	2.78	2.74	2.85	2.80	2.76
105	TC	37.6	33.9	28.8	39.2	36.0	32.3	40.1	37.0	34.6
	SHC	18.8	23.3	26.3	20.8	26.8	31.4	22.3	29.7	34.5
	kW	3.13	3.08	3.01	3.16	3.11	3.06	3.18	3.13	3.09
115	TC	35.9	31.9	27.9	37.4	34.2	30.2	38.3	35.3	32.5
	SHC	18.2	22.5	25.8	20.2	26.1	30.1	21.8	29.0	32.5
	kW	3.49	3.43	3.36	3.52	3.47	3.40	3.54	3.50	3.45
125	TC	34.2	30.5	26.3	35.5	32.1	28.6	36.3	33.2	31.0
	SHC	17.6	21.9	25.0	19.5	25.3	28.6	21.4	28.2	31.0
	kW	3.88	3.81	3.74	3.91	3.85	3.79	3.92	3.88	3.84

50HJQ005 (4 Tons)

Temp (F) Outdoor Entering Air (Edb)		Indoor Entering Air — Cfm/Bf								
		1200/0.13			1600/0.16			2000/0.19		
		Indoor Entering Air — Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	53.1	48.7	45.0	55.6	49.6	46.7	56.1	50.7	48.4
	SHC	25.1	30.7	36.7	27.3	32.6	40.5	28.2	35.1	44.6
	kW	2.92	2.86	2.82	2.96	2.87	2.84	2.96	2.88	2.87
85	TC	51.9	47.3	43.7	53.9	49.1	45.6	54.4	50.2	46.9
	SHC	24.9	30.2	36.2	26.7	33.4	40.4	27.7	36.1	44.2
	kW	3.29	3.22	3.19	3.32	3.25	3.21	3.32	3.27	3.23
95	TC	50.5	45.5	42.1	51.8	47.4	44.0	52.3	47.4	44.6
	SHC	24.3	29.5	35.6	26.0	32.8	39.9	27.0	34.3	42.4
	kW	3.70	3.62	3.58	3.71	3.65	3.61	3.72	3.64	3.61
105	TC	48.2	43.7	40.5	50.0	45.3	42.2	50.8	46.3	43.2
	SHC	23.6	28.9	35.1	25.7	32.0	39.5	27.2	34.8	42.4
	kW	4.14	4.06	4.04	4.16	4.08	4.05	4.18	4.10	4.06
115	TC	45.1	42.1	38.2	46.4	43.5	39.9	46.0	44.4	41.3
	SHC	22.1	28.7	34.0	23.6	31.9	38.6	23.8	34.4	41.3
	kW	4.57	4.55	4.50	4.59	4.56	4.52	4.58	4.57	4.54
125	TC	43.2	39.5	36.1	43.9	41.2	37.7	44.9	41.8	39.6
	SHC	21.7	27.7	33.0	23.0	31.3	37.6	24.5	33.9	39.6
	kW	5.10	5.05	5.02	5.11	5.08	5.05	5.13	5.09	5.08

50HJQ006 (5 Tons)

Temp (F) Outdoor Entering Air (Edb)		Indoor Entering Air — Cfm/Bf								
		1500/0.03			2000/0.05			2500/0.07		
		Indoor Entering Air — Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	70.4	62.3	52.9	73.6	68.2	58.4	75.5	69.1	64.9
	SHC	34.2	42.0	48.1	37.8	49.6	57.6	41.1	53.8	64.8
	kW	3.75	3.73	3.58	3.80	3.80	3.69	3.83	3.74	3.75
85	TC	68.5	58.9	50.8	71.0	65.4	56.5	72.7	66.9	62.7
	SHC	33.6	40.6	47.1	37.1	48.5	56.4	40.3	53.9	62.6
	kW	4.20	4.16	4.03	4.24	4.23	4.12	4.27	4.20	4.17
95	TC	65.8	55.3	47.4	68.8	62.2	53.5	70.5	64.0	60.3
	SHC	32.8	39.2	45.5	36.6	47.3	53.5	40.2	53.1	60.2
	kW	4.69	4.63	4.49	4.75	4.70	4.60	4.78	4.68	4.67
105	TC	63.0	51.4	43.6	65.6	58.1	50.2	67.1	60.7	57.5
	SHC	31.7	37.6	43.6	35.6	45.8	50.2	39.1	52.1	57.5
	kW	5.22	5.13	5.00	5.27	5.21	5.12	5.30	5.22	5.20
115	TC	59.4	48.2	40.8	62.1	52.6	46.8	63.7	55.5	52.6
	SHC	30.6	36.4	40.8	34.6	43.7	46.8	38.4	50.3	52.5
	kW	5.83	5.70	5.59	5.87	5.77	5.70	5.89	5.81	5.77
125	TC	53.8	44.6	40.4	56.8	46.3	43.3	59.5	47.8	47.3
	SHC	28.7	35.0	40.3	33.0	41.3	43.3	37.3	46.9	47.3
	kW	6.44	6.30	6.21	6.50	6.36	6.32	6.54	6.40	6.39

Standard Ratings

LEGEND

Bf — Bypass Factor
Edb — Entering Dry-Bulb
Ewb — Entering Wet-Bulb
kW — Compressor Motor Power Input
SHC — Sensible Heat Capacity (1000 Btuh) Gross
TC — Total Capacity (1000 Btuh) Gross

NOTES:

1. Direct interpolation is permissible. Do not extrapolate.
2. The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{sensible capacity (Btuh)}}{1.10 \times \text{cfm}}$$

t_{lwb} = Wet-bulb temperature corresponding to enthalpy of air leaving evaporator coil (h_{lwb})

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

Where: h_{ewb} = Enthalpy of air entering evaporator coil

3. The SHC is based on 80 F edb temperature of air entering evaporator coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHC.
   Above 80 F edb, add (corr factor x cfm) to SHC.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

COOLING CAPACITIES (cont)

50HJQ007 (6 Tons)

Temp (F) Outdoor Entering Air (Edb)		Indoor Entering Air — Cfm/Bf															
		1800/0.06				2100/0.066				2400/0.071				3000/0.088			
		Indoor Entering Air — Ewb (F)															
		72	67	62	57	72	67	62	57	72	67	62	57	72	67	62	57
75	TC	83.2	77.6	71.6	67.9	84.7	79.8	73.6	71.5	85.9	81.0	75.0	74.3	88.4	82.9	78.4	78.3
	SHC	39.7	50.4	60.6	66.6	41.6	54.3	65.9	70.1	43.4	57.6	70.6	72.8	47.2	63.9	76.9	76.8
	kW	4.90	4.78	4.69	4.63	4.94	4.84	4.71	4.69	4.97	4.86	4.74	4.73	5.04	4.91	4.81	4.81
85	TC	81.5	75.5	69.0	64.8	83.2	77.3	71.1	69.4	84.5	78.5	72.7	72.2	86.2	80.8	76.5	76.5
	SHC	39.2	49.8	59.6	63.6	41.4	53.5	65.0	68.0	43.3	56.9	69.7	70.8	47.1	64.1	75.0	75.0
	kW	5.45	5.34	5.23	5.16	5.49	5.36	5.27	5.23	5.52	5.38	5.29	5.27	5.57	5.45	5.36	5.36
95	TC	78.8	72.5	64.1	61.8	80.9	74.5	67.0	66.1	82.0	76.0	69.9	69.9	83.7	78.1	74.2	74.1
	SHC	38.4	48.6	57.4	60.6	40.8	52.6	63.2	64.8	42.8	56.4	68.3	68.5	46.8	63.7	72.7	72.7
	kW	6.03	5.91	5.79	5.73	6.09	5.96	5.84	5.82	6.11	6.00	5.89	5.89	6.16	6.05	5.96	5.96
105	TC	76.2	69.5	58.6	57.8	77.9	71.3	63.4	63.1	79.3	72.7	67.2	67.2	81.1	74.5	71.3	71.2
	SHC	37.6	47.4	55.0	56.6	39.9	51.4	61.4	61.9	42.2	55.3	65.9	65.9	46.5	62.5	69.9	69.9
	kW	6.69	6.56	6.40	6.38	6.73	6.61	6.45	6.44	6.77	6.64	6.51	6.51	6.82	6.67	6.57	6.57
115	TC	72.5	65.1	54.8	54.7	74.3	67.8	58.6	58.6	75.6	69.1	63.2	63.2	77.3	70.9	68.4	68.4
	SHC	36.3	45.8	53.2	53.6	38.7	50.2	57.4	57.5	41.1	54.0	62.0	62.0	45.5	61.3	67.1	67.1
	kW	7.37	7.24	7.08	7.07	7.43	7.30	7.16	7.16	7.48	7.34	7.21	7.21	7.52	7.38	7.32	7.32

50HJQ008 (7½ Tons)

Temp (F) Outdoor Entering Air (Edb)		Indoor Entering Air — Cfm/Bf								
		2250/0.12			3000/0.15			3750/0.18		
		Indoor Entering Air — Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	97.6	92.5	84.3	100.8	95.6	89.9	101.6	97.8	91.7
	SHC	47.7	61.0	72.7	51.5	67.3	83.8	55.0	74.4	89.7
	kW	5.80	5.76	5.73	5.86	5.78	5.78	5.86	5.82	5.73
85	TC	97.2	89.9	79.8	100.0	94.1	86.7	102.4	96.0	89.9
	SHC	48.1	60.2	70.5	51.7	68.1	82.4	55.8	74.1	89.3
	kW	6.61	6.50	6.43	6.65	6.56	6.62	6.69	6.58	6.50
95	TC	94.4	86.9	75.0	98.2	91.3	81.8	99.6	93.7	87.3
	SHC	47.3	59.2	68.1	51.7	67.5	79.8	55.0	74.8	87.3
	kW	7.43	7.37	7.19	7.50	7.41	7.30	7.50	7.43	7.35
105	TC	91.7	82.2	70.7	94.8	87.3	76.6	97.0	90.1	83.4
	SHC	46.3	57.4	65.9	50.9	66.3	76.4	54.8	74.1	83.4
	kW	8.37	8.22	8.04	8.39	8.33	8.15	8.44	8.35	8.26
115	TC	87.7	77.4	66.9	91.7	81.6	72.5	93.9	85.3	78.8
	SHC	44.9	55.4	64.0	50.3	64.2	72.5	55.0	72.5	78.6
	kW	9.33	9.16	8.98	9.44	9.27	9.11	9.48	9.33	9.22
125	TC	83.6	73.3	66.7	87.1	76.0	69.1	89.5	79.0	74.4
	SHC	43.6	53.9	63.8	48.7	62.0	69.1	53.7	70.1	74.4
	kW	10.38	10.16	9.94	10.49	10.27	10.14	10.53	10.36	10.25

50HJQ012 (10 Tons)

Temp (F) Outdoor Entering Air (Edb)		Indoor Entering Air — Cfm/Bf								
		3000/0.03			4000/0.04			5000/0.06		
		Indoor Entering Air — Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	136.0	124.0	111.4	141.2	129.0	116.6	145.6	132.0	121.2
	SHC	64.6	80.8	96.0	71.2	92.4	111.8	78.6	103.2	121.0
	kW	7.51	7.35	7.20	7.61	7.45	7.29	7.72	7.53	7.39
85	TC	132.6	119.6	106.6	137.6	124.4	112.0	140.4	127.4	118.0
	SHC	63.6	79.2	94.0	70.6	91.4	110.0	77.0	102.6	118.0
	kW	8.40	8.23	8.09	8.50	8.33	8.17	8.58	8.40	8.27
95	TC	127.8	114.6	99.4	133.2	119.4	107.2	136.2	121.8	114.2
	SHC	62.2	77.6	90.8	69.6	89.8	107.0	76.8	101.2	113.8
	kW	9.36	9.18	9.01	9.48	9.30	9.15	9.56	9.36	9.24
105	TC	122.4	108.8	92.0	127.4	113.6	101.4	130.4	116.0	109.6
	SHC	60.4	75.4	87.4	68.0	88.0	101.4	75.4	99.4	109.4
	kW	10.41	10.26	10.02	10.53	10.35	10.22	10.63	10.43	10.35
115	TC	116.8	101.8	86.6	121.2	106.6	94.8	123.6	109.2	104.6
	SHC	58.6	72.8	84.6	66.0	85.4	94.8	73.4	97.0	104.6
	kW	11.58	11.37	11.15	11.68	11.51	11.35	11.76	11.60	11.51
125	TC	110.6	95.8	84.6	114.6	98.4	88.8	117.0	100.8	96.4
	SHC	56.4	70.6	83.4	64.4	82.4	88.8	71.4	93.8	96.4
	kW	12.87	12.62	12.36	12.97	12.73	12.60	13.03	12.83	12.77

Standard Ratings

LEGEND

Bf — Bypass Factor
Edb — Entering Dry-Bulb
Ewb — Entering Wet-Bulb
kW — Compressor Motor Power Input
SHC — Sensible Heat Capacity (1000 Btuh) Gross
TC — Total Capacity (1000 Btuh) Gross

NOTES:

1. Direct interpolation is permissible. Do not extrapolate.
2. The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{sensible capacity (Btuh)}}{1.10 \times \text{cfm}}$$

t_{lwb} = Wet-bulb temperature corresponding to enthalpy of air leaving evaporator coil (h_{lwb})

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

Where: h_{ewb} = Enthalpy of air entering evaporator coil

3. The SHC is based on 80 F edb temperature of air entering evaporator coil. Below 80 F edb, subtract (corr factor x cfm) from SHC. *Above 80 F edb, add (corr factor x cfm) to SHC.* Correction Factor = 1.10 x (1 – BF) x (edb – 80).

Performance data (cont)

INSTANTANEOUS AND INTEGRATED HEATING RATINGS

50HJQ004 (3 Tons)

Return Air (F db)	Cfm (Standard Air)		Temperature Air Entering Outdoor Coil (F db at 70% rh)																	
			–20		–10		0		10		17		30		40		47		50		60	
55	900	Cap.	10.9	10.0	13.7	12.6	16.6	15.3	19.7	18.1	22.1	20.1	26.8	23.5	30.9	30.9	34.0	34.0	35.3	35.3	40.7	40.7
		kW	1.97		2.06		2.14		2.22		2.30		2.42		2.54		2.64		2.69		2.87	
	1200	Cap.	11.4	10.4	14.2	13.0	17.1	15.7	20.1	18.4	22.5	20.5	27.3	24.0	31.5	31.5	34.7	34.7	36.1	36.1	41.7	41.7
		kW	2.02		2.09		2.15		2.22		2.27		2.37		2.46		2.53		2.56		2.71	
	1500	Cap.	11.7	10.8	14.6	13.4	17.4	16.0	20.5	18.8	22.9	20.9	27.8	24.4	32.0	32.0	35.2	35.2	36.7	36.7	42.5	42.5
		kW	2.08		2.14		2.19		2.26		2.29		2.37		2.44		2.50		2.53		2.66	
70	900	Cap.	9.5	8.8	12.6	11.6	15.6	14.5	19.0	17.4	21.4	19.5	26.2	23.0	30.1	30.1	33.1	33.1	34.5	34.5	39.5	39.5
		kW	2.18		2.31		2.42		2.54		2.63		2.80		2.95		3.06		3.11		3.33	
	1200	Cap.	10.0	9.2	13.1	12.1	16.2	14.9	19.5	17.9	21.9	20.0	26.7	23.4	30.7	30.7	33.8	33.8	35.1	35.1	40.5	40.5
		kW	2.24		2.34		2.44		2.52		2.60		2.73		2.83		2.93		2.97		3.12	
	1500	Cap.	10.4	9.6	13.5	12.4	16.6	15.3	19.9	18.2	22.3	20.4	27.1	23.8	31.2	31.2	34.3	34.3	35.7	35.7	41.2	41.2
		kW	2.30		2.39		2.47		2.55		2.61		2.72		2.80		2.87		2.91		3.05	
80	900	Cap.	8.4	7.7	11.6	10.7	14.9	13.7	18.3	16.8	20.8	18.9	25.7	22.6	29.6	29.6	32.5	32.5	33.8	33.8	38.7	38.7
		kW	2.32		2.47		2.62		2.76		2.87		3.08		3.22		3.37		3.43		3.67	
	1200	Cap.	8.9	8.2	12.2	11.2	15.4	14.3	18.9	17.3	21.4	19.5	26.2	23.0	30.2	30.2	33.2	33.2	34.6	34.6	39.7	39.7
		kW	2.38		2.50		2.63		2.75		2.83		2.99		3.12		3.21		3.25		3.44	
	1500	Cap.	9.3	8.5	12.6	11.6	15.9	14.7	19.3	17.7	21.8	19.9	26.7	23.4	30.6	30.6	33.7	33.7	35.0	35.0	40.4	40.4
		kW	2.44		2.55		2.67		2.77		2.83		2.97		3.07		3.15		3.19		3.34	

50HJQ005 (4 Tons)

Return Air (F db)	Cfm (Standard Air)		Temperature Air Entering Outdoor Coil (F db at 70% rh)																	
			–20		–10		0		10		17		30		40		47		50		60	
55	1200	Cap.	14.9	13.8	18.7	17.2	22.8	20.9	27.0	24.8	30.3	27.6	36.8	32.3	42.2	42.2	46.3	46.3	48.3	48.3	55.5	55.5
		kW	2.61		2.73		2.86		3.00		3.10		3.31		3.50		3.65		3.73		4.02	
	1600	Cap.	15.5	14.4	19.4	17.8	23.4	21.5	27.7	25.4	30.9	28.2	37.5	32.9	43.1	43.1	47.4	47.4	49.5	49.5	57.0	57.0
		kW	2.67		2.77		2.87		2.98		3.05		3.21		3.35		3.46		3.52		3.75	
	2000	Cap.	16.1	14.9	19.9	18.3	23.9	22.0	28.2	25.8	31.5	28.7	38.1	33.5	43.8	43.8	48.2	48.2	50.3	50.3	58.0	58.0
		kW	2.75		2.83		2.92		3.00		3.07		3.19		3.31		3.40		3.45		3.65	
70	1200	Cap.	13.1	12.1	17.1	15.7	21.4	19.7	25.8	23.7	29.2	26.6	35.9	31.5	41.2	41.2	45.1	45.1	47.0	47.0	53.9	53.9
		kW	2.92		3.10		3.28		3.46		3.60		3.88		4.10		4.28		4.37		4.71	
	1600	Cap.	13.8	12.7	17.9	16.4	22.2	20.4	26.6	24.5	30.0	27.3	36.6	32.2	42.0	42.0	46.1	46.1	48.1	48.1	55.2	55.2
		kW	2.98		3.14		3.28		3.42		3.53		3.74		3.91		4.04		4.11		4.37	
	2000	Cap.	14.4	13.2	18.5	17.0	22.8	20.9	27.2	24.9	30.7	27.9	37.2	32.7	42.7	42.7	46.8	46.8	48.9	48.9	56.2	56.2
		kW	3.06		3.20		3.32		3.44		3.54		3.70		3.84		3.95		4.01		4.22	
80	1200	Cap.	11.5	10.6	15.8	14.6	20.3	18.6	24.8	22.9	28.3	25.8	35.1	30.8	40.4	40.4	44.5	44.5	46.2	46.2	52.9	52.9
		kW	3.13		3.35		3.56		3.78		3.94		4.28		4.55		4.75		4.85		5.22	
	1600	Cap.	12.3	11.3	16.5	15.2	21.1	19.4	25.6	23.6	29.1	26.5	36.0	31.6	41.3	41.3	45.4	45.4	47.2	47.2	54.2	54.2
		kW	3.19		3.39		3.57		3.74		3.87		4.13		4.33		4.48		4.56		4.84	
	2000	Cap.	12.8	11.8	17.2	15.8	21.7	19.9	26.3	24.2	29.8	27.1	36.6	32.1	42.0	42.0	46.0	46.0	48.0	48.0	55.1	55.1
		kW	3.28		3.45		3.61		3.76		3.87		4.08		4.24		4.37		4.43		4.66	

LEGEND

Cap. — Heating Capacity (1000 Btuh) (includes indoor-fan motor heat)
kW — Total Power Input (includes compressor motor power input, outdoor-fan motor input, and indoor-fan motor input)
rh — Relative Humidity

NOTES:
1. ▭ indicates integrated ratings.
2. Integrated capacity is maximum (instantaneous) capacity less the effect of frost on the outdoor coil and the heat required to defrost it.

INSTANTANEOUS AND INTEGRATED HEATING RATINGS (cont)

50HJQ006 (5 Tons)

Return Air (F db)	Cfm (Standard Air)		Temperature Air Entering Outdoor Coil (F db at 70% rh)									
			–20	–10	0	10	17	30	40	47	50	60
55	1500	Cap.	19.4 | 17.8	24.8 | 22.8	29.7 | 27.3	34.7 | 31.8	38.5 | 35.1	46.8 | 41.0	53.9 | 53.9	59.5 | 59.5	62.1 | 62.1	71.9 | 71.9
		kW	3.28	3.53	3.67	3.77	3.85	4.04	4.21	4.36	4.43	4.73
	2000	Cap.	20.7 | 19.0	25.9 | 23.8	30.6 | 28.1	35.6 | 32.6	39.5 | 36.0	48.0 | 42.1	55.4 | 55.4	61.1 | 61.1	63.8 | 63.8	73.3 | 73.3
		kW	3.48	3.68	3.77	3.84	3.90	4.04	4.18	4.30	4.37	4.60
	2500	Cap.	21.7 | 20.0	26.8 | 24.7	31.4 | 28.9	36.4 | 33.4	40.4 | 36.8	49.0 | 42.9	56.5 | 56.5	62.2 | 62.2	65.0 | 65.0	72.1 | 72.1
		kW	3.69	3.85	3.92	3.98	4.03	4.15	4.28	4.40	4.46	4.61
70	1500	Cap.	14.5 | 13.3	21.8 | 20.0	28.2 | 26.0	34.0 | 31.2	37.8 | 34.5	45.7 | 40.1	52.4 | 52.4	57.7 | 57.7	60.2 | 60.2	69.5 | 69.5
		kW	3.20	3.71	4.07	4.30	4.42	4.64	4.83	5.00	5.08	5.40
	2000	Cap.	15.9 | 14.7	23.3 | 21.4	29.5 | 27.1	34.9 | 32.1	38.7 | 35.3	46.8 | 41.0	53.7 | 53.7	59.3 | 59.3	61.8 | 61.8	71.5 | 71.5
		kW	3.44	3.91	4.20	4.36	4.43	4.59	4.74	4.87	4.94	5.21
	2500	Cap.	17.2 | 15.8	24.5 | 22.5	30.5 | 28.1	35.8 | 32.9	39.6 | 36.1	47.8 | 41.9	54.8 | 54.8	60.4 | 60.4	63.1 | 63.1	72.4 | 72.4
		kW	3.67	4.11	4.35	4.47	4.53	4.66	4.79	4.91	4.97	5.21
80	1500	Cap.	9.9 | 9.1	18.3 | 16.8	25.9 | 23.8	32.8 | 30.1	37.0 | 33.8	45.1 | 39.5	51.6 | 51.6	56.7 | 56.7	59.1 | 59.1	68.1 | 68.1
		kW	3.04	3.66	4.20	4.60	4.80	5.10	5.32	5.49	5.58	5.92
	2000	Cap.	11.2 | 10.3	20.0 | 18.4	27.5 | 25.3	34.2 | 31.4	38.2 | 34.8	46.1 | 40.4	52.8 | 52.8	58.1 | 58.1	60.6 | 60.6	70.0 | 70.0
		kW	3.27	3.89	4.38	4.69	4.83	5.02	5.18	5.32	5.38	5.66
	2500	Cap.	12.4 | 11.4	21.3 | 19.6	28.8 | 26.5	35.1 | 32.3	39.1 | 35.6	47.1 | 41.2	53.9 | 53.9	59.3 | 59.3	61.8 | 61.8	71.4 | 71.4
		kW	3.50	4.12	4.56	4.81	4.92	5.07	5.20	5.32	5.38	5.65

50HJQ007 (6 Tons)

Return Air (F db)	Cfm (Standard Air)		Temperature Air Entering Outdoor Coil (F db at 70% rh)									
			–20	–10	0	10	17	30	40	47	50	60
55	1800	Cap.	16.5 | 15.2	20.8 | 19.1	26.4 | 22.4	33.6 | 30.8	41.0 | 37.6	51.3 | 44.9	61.9 | 61.9	69.5 | 69.5	78.0 | 78.0	77.9 | 77.9
		kW	3.50	3.63	3.79	4.01	4.18	4.57	4.94	5.22	5.57	5.55
	2100	Cap.	16.9 | 15.5	21.2 | 19.5	27.2 | 23.1	34.9 | 32.0	41.8 | 38.3	52.2 | 45.8	63.2 | 63.2	69.6 | 69.6	75.7 | 75.7	76.5 | 76.5
		kW	3.56	3.68	3.84	4.04	4.18	4.54	4.86	5.07	5.30	5.32
	2400	Cap.	17.2 | 15.9	21.8 | 20.0	28.0 | 23.8	35.6 | 32.6	43.1 | 39.5	53.8 | 47.2	64.1 | 64.1	69.0 | 69.0	74.8 | 74.8	74.3 | 74.3
		kW	3.64	3.75	3.89	4.08	4.21	4.54	4.82	4.97	5.18	5.15
	3000	Cap.	18 | 16.5	23.0 | 21.1	29.4 | 25.0	37.4 | 34.4	45.2 | 41.4	56.6 | 49.6	63.2 | 63.2	65.5 | 65.5	69.8 | 69.8	70.6 | 70.6
		kW	3.79	3.90	4.03	4.19	4.32	4.61	4.77	4.84	4.98	4.99
70	1800	Cap.	15.2 | 14.0	18.2 | 16.7	24.1 | 20.5	31.1 | 28.5	38.0 | 34.8	47.7 | 41.8	58.4 | 58.4	67.1 | 67.1	78.0 | 78.0	77.9 | 77.9
		kW	3.97	4.12	4.33	4.57	4.75	5.19	5.59	5.94	6.43	6.41
	2100	Cap.	15.6 | 14.4	18.6 | 17.1	24.8 | 21.1	32.0 | 29.4	39.1 | 35.9	49.1 | 43.1	59.7 | 59.7	68.5 | 68.5	77.3 | 77.3	76.7 | 76.7
		kW	4.04	4.18	4.37	4.59	4.76	5.15	5.51	5.81	6.17	6.13
	2400	Cap.	16.1 | 14.8	19.0 | 17.5	25.9 | 22.0	32.7 | 30.0	39.9 | 36.6	51.1 | 44.7	61.3 | 61.3	69.0 | 69.0	75.6 | 75.6	76.3 | 76.3
		kW	4.11	4.24	4.43	4.63	4.79	5.17	5.48	5.73	5.97	5.99
	3000	Cap.	16.8 | 15.5	19.7 | 18.1	26.7 | 22.7	34.3 | 31.5	41.8 | 38.3	53.5 | 46.8	63.7 | 63.7	68.3 | 68.3	73.0 | 73.0	73.8 | 73.8
		kW	4.28	4.39	4.56	4.75	4.89	5.22	5.49	5.63	5.80	5.82
80	1800	Cap.	13.6 | 12.5	17.1 | 15.7	21.7 | 18.4	29.2 | 26.8	36.5 | 33.4	45.6 | 40.0	55.3 | 55.3	64.2 | 64.2	77.2 | 77.2	76.9 | 76.9
		kW	4.20	4.46	4.67	4.95	5.16	5.62	6.02	6.40	7.00	6.98
	2100	Cap.	14.1 | 13.0	17.6 | 16.2	22.6 | 19.2	30.1 | 27.6	37.1 | 34.0	46.9 | 41.1	57.0 | 57.0	66.4 | 66.4	76.3 | 76.3	77.2 | 77.2
		kW	4.28	4.52	4.72	4.98	5.16	5.58	5.95	6.30	6.71	6.74
	2400	Cap.	14.5 | 13.4	18.0 | 16.6	23.1 | 19.6	31.2 | 28.7	37.9 | 32.7	48.5 | 42.5	58.7 | 58.7	67.7 | 67.7	76.3 | 76.3	75.9 | 75.9
		kW	4.37	4.59	4.77	5.03	34.7	5.59	5.93	6.23	6.57	6.54
	3000	Cap.	15.4 | 14.1	18.8 | 17.3	24.1 | 20.5	32.2 | 29.6	39.6 | 36.3	50.4 | 44.2	61.6 | 61.6	68.9 | 68.9	74.3 | 74.3	74.5 | 74.5
		kW	4.54	4.74	4.91	5.14	5.29	5.64	5.95	6.17	6.37	6.36

LEGEND

Cap. — Heating Capacity (1000 Btuh) (includes indoor-fan motor heat)
kW — Total Power Input (includes compressor motor power input, outdoor-fan motor input, and indoor-fan motor input)
rh — Relative Humidity

NOTES:
1. ▭ indicates integrated ratings.
2. Integrated capacity is maximum (instantaneous) capacity less the effect of frost on the outdoor coil and the heat required to defrost it.

Performance data (cont)

INSTANTANEOUS AND INTEGRATED HEATING RATINGS (cont)

50HJQ008 (7 1/2 Tons)

Return Air (F db)	Cfm (Standard Air)		Temperature Air Entering Outdoor Coil (F db at 70% rh))																	
			–20		–10		0		10		17		30		40		47		50		60	
55	2250	Cap.	31.4	28.8	37.8	34.9	44.5	41.0	52.1	47.8	57.6	52.5	70.2	61.5	79.9	79.9	87.9	87.9	91.6	91.6	105.9	105.9
		kW	5.32		5.47		5.61		5.74		5.84		6.09		6.72		6.92		7.02		7.48	
	3000	Cap.	33.3	30.6	39.6	36.5	46.3	42.5	53.9	49.4	59.6	54.3	72.1	63.1	81.9	81.9	90.0	90.0	93.9	93.9	105.1	105.1
		kW	5.76		5.90		6.01		6.13		6.23		6.44		7.05		7.25		7.35		7.64	
	3750	Cap.	35.1	32.1	41.4	38.2	48.0	44.1	55.7	51.0	61.3	56.1	73.9	64.7	83.6	83.6	91.8	91.8	94.7	94.7	103.4	103.4
		kW	6.23		6.34		6.44		6.56		6.63		6.85		7.48		7.68		7.75		7.93	
70	2250	Cap.	28.8	26.5	35.9	32.9	43.1	39.8	50.8	46.6	56.4	51.4	68.4	60.0	77.8	77.8	85.6	85.6	89.2	89.2	103.2	103.2
		kW	5.76		5.99		6.21		6.40		6.54		6.85		7.54		7.77		7.89		8.36	
	3000	Cap.	30.6	28.2	37.8	34.7	45.1	41.6	52.5	48.2	58.2	53.1	70.2	61.5	79.7	79.7	87.5	87.5	91.4	91.4	105.3	105.3
		kW	6.19		6.40		6.60		6.77		6.89		7.14		7.83		8.03		8.16		8.61	
	3750	Cap.	32.3	29.8	39.4	36.3	46.8	43.8	54.3	49.8	60.0	54.7	72.1	63.3	81.7	81.7	89.6	89.6	93.3	93.3	105.5	105.5
		kW	6.63		6.85		7.00		7.18		7.28		7.53		8.22		8.43		8.53		8.88	
80	2250	Cap.	26.3	24.1	33.9	31.2	41.7	38.4	49.6	45.7	55.5	50.6	67.2	58.8	76.4	76.4	84.0	84.0	87.7	87.7	101.1	101.1
		kW	6.01		6.34		6.62		6.87		7.06		7.39		8.18		8.43		8.55		9.06	
	3000	Cap.	28.0	25.9	35.9	33.1	43.7	40.2	51.3	47.2	57.2	52.3	69.0	60.6	78.4	78.4	86.1	86.1	89.8	89.8	103.4	103.4
		kW	6.44		6.75		7.00		7.22		7.37		7.68		8.43		8.65		8.78		9.25	
	3750	Cap.	29.8	27.4	37.8	34.7	45.5	41.9	53.3	48.8	59.0	53.9	71.0	62.1	80.1	80.1	88.1	88.1	91.8	91.8	105.3	105.3
		kW	6.89		7.18		7.41		7.60		7.76		8.03		8.80		9.00		9.13		9.58	

50HJQ012 (10 Tons)

Return Air (F db)	Cfm (Standard Air)		Temperature Air Entering Outdoor Coil (F db at 70% rh))																	
			–20		–10		0		10		17		30		40		47		50		60	
55	3000	Cap.	37.7	34.6	45.5	41.9	53.5	49.2	62.6	57.5	69.2	63.1	84.3	74.0	101.3	101.3	111.3	111.3	116.0	116.0	134.2	134.2
		kW	6.87		7.07		7.25		7.43		7.55		7.88		8.26		8.52		8.64		9.20	
	4000	Cap.	40.0	36.7	47.6	43.8	55.6	51.1	64.8	59.4	71.6	65.2	86.7	75.8	103.7	103.7	114.0	114.0	118.9	118.9	133.2	133.2
		kW	7.45		7.63		7.78		7.93		8.05		8.33		8.67		8.92		9.05		9.40	
	5000	Cap.	42.2	38.6	49.7	45.9	57.7	53.0	66.9	61.2	73.7	67.4	88.8	77.7	105.9	105.9	116.2	116.2	119.9	119.9	131.0	131.0
		kW	8.05		8.20		8.33		8.48		8.58		8.86		9.20		9.45		9.53		9.76	
70	3000	Cap.	34.6	31.8	43.1	39.6	51.8	47.8	61.0	56.1	67.8	61.7	82.2	72.1	98.5	98.5	108.4	108.4	113.0	113.0	130.7	130.7
		kW	7.45		7.75		8.03		8.28		8.45		8.86		9.28		9.55		9.71		10.29	
	4000	Cap.	36.7	33.9	45.5	41.7	54.2	49.9	63.1	57.9	69.9	63.8	84.3	74.0	101.0	101.0	110.8	110.8	115.8	115.8	133.4	133.4
		kW	8.00		8.28		8.53		8.76		8.91		9.23		9.63		9.88		10.04		10.59	
	5000	Cap.	38.9	35.8	47.3	43.6	56.3	51.8	65.2	59.8	72.1	65.7	86.7	76.1	103.5	103.5	113.5	113.5	118.2	118.2	133.7	133.7
		kW	8.58		8.86		9.06		9.28		9.41		9.73		10.11		10.37		10.49		10.92	
80	3000	Cap.	31.6	29.0	40.7	37.4	50.2	46.2	59.6	54.9	66.7	60.8	80.8	70.7	96.8	96.8	06.4	106.4	111.1	111.1	128.0	128.0
		kW	7.78		8.20		8.56		8.88		9.13		9.56		10.06		10.37		10.52		11.15	
	4000	Cap.	33.7	31.1	43.1	39.8	52.5	48.3	61.9	56.8	68.8	62.9	82.9	72.8	99.3	99.3	109.1	109.1	113.8	113.8	131.0	131.0
		kW	8.33		8.73		9.06		9.33		9.53		9.93		10.37		10.64		10.80		11.38	
	5000	Cap.	35.8	33.0	45.5	41.7	54.6	50.4	64.1	58.6	70.9	64.8	85.3	74.7	101.5	101.5	111.6	111.6	116.2	116.2	133.4	133.4
		kW	8.91		9.28		9.58		9.83		10.04		10.39		10.82		11.08		11.23		11.78	

LEGEND

Cap. — Heating Capacity (1000 Btuh) (includes indoor-fan motor heat)
kW — Total Power Input (includes compressor motor power input, outdoor-fan motor input, and indoor-fan motor input)
rh — Relative Humidity

NOTES:

1. ▭ indicates integrated ratings.
2. Integrated capacity is maximum (instantaneous) capacity less the effect of frost on the outdoor coil and the heat required to defrost it.

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS

50HJQ004 (3 TONS) — STANDARD MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)											
	0.1		0.2		0.3		0.4		0.5		0.6	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
900	**581**	**0.12**	**673**	**0.18**	**736**	**0.22**	805	0.25	865	0.29	911	0.34
1000	**644**	**0.19**	**709**	**0.22**	782	0.28	835	0.30	900	0.35	937	0.38
1100	**687**	**0.22**	**746**	**0.26**	806	0.30	867	0.35	929	0.40	964	0.40
1200	**733**	**0.26**	785	0.32	843	0.35	903	0.41	960	0.47	994	0.50
1300	**754**	**0.29**	826	0.38	891	0.43	942	0.48	991	0.53	1047	0.60
1400	810	0.35	868	0.45	937	0.51	984	0.57	1032	0.62	1067	0.67
1500	841	0.42	911	0.53	985	0.61	1029	0.66	1073	0.72	**1109**	**0.77**

50HJQ004 (3 TONS) — STANDARD MOTOR (BELT DRIVE) (cont)

Airflow (Cfm)	External Static Pressure (in. wg)											
	0.7		0.8		0.9		1.0		1.1		1.2	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
900	957	0.39	988	0.43	1039	0.45	1061	0.47	1083	0.53	**1105**	**0.57**
1000	992	0.44	1039	0.49	1061	0.51	1086	0.55	**1111**	**0.59**	**1136**	**0.63**
1100	1013	0.49	1068	0.55	1090	0.58	**1109**	**0.61**	**1127**	**0.64**	**1145**	**0.67**
1200	1045	0.56	1090	0.64	**1109**	**0.64**	**1156**	**0.68**	**1203**	**0.71**	**1250**	**0.74**
1300	1075	0.64	**1122**	**0.70**	**1152**	**0.72**	**1190**	**0.76**	**1228**	**0.80**	**1266**	**0.84**
1400	**1110**	**0.73**	**1160**	**0.84**	**1181**	**0.81**	**1237**	**0.85**	**1293**	**0.89**	**1349**	**0.93**
1500	**1150**	**0.82**	**1190**	**1.00**	**1225**	**0.90**	**1271**	**0.95**	**1317**	**1.00**	**1363**	**1.05**

LEGEND

Bhp — Brake Horsepower Input to Fan

Refer to page 106 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates a field-supplied drive is required. (See Note 3.)
2. Maximum continuous bhp is 1.20.
3. Motor drive range: 760 to 1090 rpm. All other rpms require field-supplied drive.

50HJQ005 (4 TONS) — STANDARD MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)													
	0.1		0.2		0.3		0.4		0.6		0.7		0.8	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
1200	**542**	**0.16**	**616**	**0.21**	**678**	**0.27**	**739**	**0.32**	842	0.44	886	0.50	929	0.56
1300	**576**	**0.20**	**644**	**0.25**	**704**	**0.31**	**764**	**0.37**	867	0.50	910	0.56	952	0.62
1400	**610**	**0.24**	**673**	**0.30**	**732**	**0.36**	**791**	**0.42**	889	0.55	933	0.62	976	0.69
1500	**646**	**0.28**	**704**	**0.35**	**761**	**0.42**	**818**	**0.48**	912	0.61	957	0.69	1001	0.76
1600	**681**	**0.33**	**735**	**0.40**	**790**	**0.47**	845	0.54	920	0.68	931	0.76	1023	0.83
1700	**718**	**0.39**	**768**	**0.46**	**836**	**0.54**	873	0.61	965	0.76	1005	0.84	1045	0.91
1800	**754**	**0.45**	**801**	**0.53**	851	0.61	900	0.69	992	0.84	1032	0.92	1071	1.00
1900	**791**	**0.52**	**836**	**0.60**	832	0.69	828	0.77	1019	0.93	1058	1.02	1097	1.10
2000	**828**	**0.60**	870	0.68	864	0.77	858	0.86	1046	1.03	1085	1.12	1124	1.21

50HJQ005 (4 TONS) — STANDARD MOTOR (BELT DRIVE) (cont)

Airflow (Cfm)	External Static Pressure (in. wg)											
	1.0		1.1		1.2		1.4		1.6		1.8	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
1200	1008	0.67	1052	0.73	1096	0.78	1134	0.89	**1203**	**1.00**	—	—
1300	1029	0.75	1065	0.81	1101	0.86	1174	1.01	**1229**	**1.15**	1277	1.27
1400	1052	0.83	1087	0.90	1121	0.96	1183	1.09	1255	1.22	1305	1.38
1500	1076	0.91	1111	0.99	1145	1.06	1208	1.20	1274	1.33	1337	1.47
1600	1100	1.00	1134	1.08	1168	1.15	1232	1.31	1291	1.46	1350	1.60
1700	1124	1.09	1158	1.17	1192	1.25	1255	1.42	1314	1.58	1370	1.77
1800	1147	1.18	1182	1.27	1217	1.36	1279	1.54	1381	1.71	1393	1.89
1900	1169	1.27	1205	1.37	1240	1.47	1303	1.66	1408	1.85	1417	2.03
2000	1194	1.38	1228	1.48	1262	1.58	1327	1.78	1436	1.98	1440	2.18

LEGEND

Bhp — Brake Horsepower Input to Fan

Refer to page 106 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates a field-supplied drive is required. (See Note 4.)
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum continuous bhp is 1.20.
4. Motor drive range: 840 to 1185 rpm. All other rpms require field-supplied drive.

Performance data (cont)

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

50HJQ006 (5 TONS) — STANDARD MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)									
	0.1		0.2		0.4		0.6		0.8	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
1500	**711**	**0.33**	**769**	**0.39**	**878**	**0.51**	**971**	**0.64**	1052	0.78
1600	**751**	**0.39**	**806**	**0.45**	**906**	**0.53**	1024	0.73	1087	0.88
1700	**791**	**0.46**	**846**	**0.53**	**941**	**0.66**	1030	0.80	1112	0.96
1800	**852**	**0.55**	**905**	**0.62**	**1002**	**0.78**	1084	0.93	1163	1.10
1900	**894**	**0.64**	**945**	**0.72**	1037	0.88	1119	1.04	1194	1.21
2000	**936**	**0.74**	**984**	**0.82**	1072	0.98	1154	1.16	1226	1.33
2100	**978**	**0.85**	1024	0.93	1108	1.10	1190	1.29	1259	1.47
2200	1021	0.97	1064	1.05	1145	1.22	1225	1.43	1294	1.62
2300	1064	1.10	1104	1.18	1183	1.36	1260	1.57	1330	1.78
2400	1107	1.24	1145	1.32	1222	1.52	1296	1.73	1365	1.94
2500	1150	1.39	1186	1.48	1262	1.68	1331	1.89	1400	2.12

50HJQ006 (5 TONS) — STANDARD MOTOR (BELT DRIVE) (cont)

Airflow (Cfm)	External Static Pressure (in. wg)							
	1.0		1.2		1.4		1.6	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
1500	1134	0.95	1213	1.11	1276	1.38	1331	1.49
1600	1159	1.02	1231	1.20	1311	1.39	1395	1.59
1700	1184	1.12	1258	1.30	1322	1.49	1403	1.69
1800	1235	1.29	1303	1.48	1371	1.69	1433	1.90
1900	1266	1.40	1330	1.59	1396	1.81	1460	2.03
2000	1297	1.53	1362	1.73	1422	1.94	1485	2.16
2100	1327	1.66	1393	1.87	1452	2.08	1510	2.31
2200	1359	1.81	1423	2.02	1483	2.24	1538	2.46
2300	1392	1.97	1454	2.18	1515	2.41	1569	2.64
2400	1426	2.15	1485	2.36	1544	2.59	1601	2.84
2500	1461	2.34	1518	2.55	1575	2.78	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan

Refer to page 106 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates a field-supplied drive is required. (See Note 4.)
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum continuous bhp is 1.80.
4. Standard motor drive range: 1020 to 1460 rpm. All other rpms require field-supplied drive.

50HJQ007 (6 TONS) — STANDARD MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)									
	0.1		0.2		0.4		0.6		0.8	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
1800	**852**	**0.55**	**905**	**0.62**	**1002**	**0.78**	**1084**	**0.93**	1163	1.10
1900	**894**	**0.64**	**945**	**0.72**	**1037**	**0.88**	**1119**	**1.04**	1194	1.21
2000	**936**	**0.74**	**984**	**0.82**	**1072**	**0.98**	1154	1.16	1226	1.33
2100	**978**	**0.85**	**1024**	**0.93**	**1108**	**1.10**	1190	1.29	1259	1.47
2200	**1021**	**0.97**	**1064**	**1.05**	1145	1.22	1225	1.43	1294	1.62
2300	**1064**	**1.10**	**1104**	**1.18**	1183	1.36	1260	1.57	1330	1.78
2400	**1107**	**1.24**	1145	1.32	1222	1.52	1296	1.73	1365	1.94
2500	1150	1.39	1186	1.48	1262	1.68	1331	1.89	1400	2.12
2600	1193	1.56	1228	1.65	1301	1.86	1367	2.07	1435	2.31
2700	1237	1.74	1269	1.83	1341	2.05	1404	2.26	1471	2.51
2800	1280	1.94	1311	2.03	1381	2.25	1442	2.47	1506	2.72
2900	1324	2.15	1354	2.24	1420	2.47	1481	2.69	1542	2.94
3000	1368	2.37	1396	2.46	1460	2.69	1521	2.93	—	—

50HJQ007 (6 TONS) — STANDARD MOTOR (BELT DRIVE) (cont)

Airflow (Cfm)	External Static Pressure (in. wg)							
	1.0		1.2		1.4		1.6	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
1800	1235	1.29	1303	1.48	1371	1.69	1433	1.90
1900	1266	1.40	1330	1.59	1396	1.81	1460	2.03
2000	1297	1.53	1362	1.73	1422	1.94	1485	2.16
2100	1327	1.66	1393	1.87	1452	2.08	1510	2.31
2200	1359	1.81	1423	2.02	1483	2.24	1538	2.46
2300	1392	1.97	1454	2.18	1515	2.41	1569	2.64
2400	1426	2.15	1485	2.36	1544	2.59	1601	2.84
2500	1461	2.34	1518	2.55	1575	2.78	—	—
2600	1497	2.54	1552	2.76	—	—	—	—
2700	1532	2.75	—	—	—	—	—	—
2800	—	—	—	—	—	—	—	—
2900	—	—	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan

Refer to page 106 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates a field-supplied drive is required. (See Note 4.)
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum continuous bhp is 2.40.
4. Standard motor drive range: 1120 to 1585 rpm. All other rpms require field-supplied drive.

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

50HJQ008 (7 1/2 TONS) — STANDARD MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)											
	0.2		0.4		0.6		0.8		1.0		1.2	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
2250	**511**	**0.52**	**592**	**0.74**	**659**	**0.95**	**722**	**1.19**	778	1.43	829	1.68
2300	**518**	**0.55**	**599**	**0.77**	**665**	**0.98**	727	1.22	783	1.47	834	1.72
2400	**534**	**0.61**	**613**	**0.84**	**677**	**1.06**	738	1.30	794	1.55	844	1.81
2500	**549**	**0.67**	**627**	**0.90**	**690**	**1.14**	750	1.38	805	1.64	855	1.91
2550	**557**	**0.71**	**633**	**0.94**	**697**	**1.18**	756	1.42	811	1.69	861	1.96
2600	**565**	**0.74**	**639**	**0.97**	**703**	**1.22**	761	1.46	816	1.74	866	2.01
2700	**581**	**0.81**	**652**	**1.04**	**717**	**1.31**	773	1.55	827	1.83	878	2.12
2800	**597**	**0.89**	**665**	**1.12**	733	1.40	786	1.66	839	1.93	889	2.23
2900	**613**	**0.97**	**679**	**1.20**	745	1.50	799	1.76	850	2.04	900	2.34
3000	**629**	**1.06**	**694**	**1.29**	759	1.59	812	1.88	862	2.15	911	2.46
3100	**646**	**1.15**	**709**	**1.39**	772	1.70	825	1.99	875	2.28	923	2.58
3200	**662**	**1.25**	**724**	**1.50**	785	1.80	840	2.11	887	2.41	**934**	**2.71**
3300	**679**	**1.35**	740	1.61	798	1.91	854	2.24	900	2.54	**946**	**2.85**
3400	**696**	**1.46**	756	1.73	811	2.02	868	2.37	914	2.69	959	3.00
3500	**712**	**1.57**	771	1.85	824	2.14	881	2.50	**928**	**2.84**	971	3.16
3600	729	1.69	787	1.98	839	2.21	894	2.64	942	2.99	984	3.22
3700	746	1.85	803	2.12	854	2.42	907	2.78	956	3.15	997	3.49
3750	755	1.89	811	2.20	862	2.49	914	2.85	963	3.23	—	—

50HJQ008 (7 1/2 TONS) — STANDARD MOTOR (BELT DRIVE) (cont)

Airflow (Cfm)	External Static Pressure (in. wg)							
	1.4		1.6		1.8		2.0	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
2250	884	1.97	**937**	**2.33**	**947**	**2.66**	1022	3.10
2300	885	2.00	**939**	**2.36**	**979**	**2.69**	1025	3.12
2400	892	2.08	**944**	**2.40**	**987**	**2.76**	1039	3.20
2500	902	2.18	**949**	**2.48**	**1002**	**2.84**	1041	3.25
2550	908	2.24	**953**	**2.53**	**1003**	**2.87**	1045	3.28
2600	913	2.29	**957**	**2.58**	1004	2.91	1050	3.31
2700	924	2.40	**967**	**2.70**	1010	3.01	1056	3.37
2800	**935**	**2.52**	**978**	**2.62**	1019	3.13	1061	3.47
2900	**946**	**2.65**	989	2.96	1030	3.27	—	—
3000	**957**	**2.78**	1000	3.09	1040	3.41	—	—
3100	968	2.91	1011	3.24	—	—	—	—
3200	980	3.04	1022	3.38	—	—	—	—
3300	991	3.18	—	—	—	—	—	—
3400	1003	3.32	—	—	—	—	—	—
3500	1014	3.48	—	—	—	—	—	—
3600	—	—	—	—	—	—	—	—
3700	—	—	—	—	—	—	—	—
3750	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan

Refer to page 106 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates a field-supplied drive is required. (See Note 4.)
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum continuous bhp is 2.90.
4. Standard motor drive range: 725 to 925 rpm. All other rpms require field-supplied drive.

Performance data (cont)

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

50HJQ012 (10 TONS) — STANDARD MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)											
	0.2		0.4		0.6		0.8		1.0		1.2	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
3000	**459**	**0.46**	**625**	**0.85**	**691**	**1.01**	**734**	**1.10**	**787**	**1.30**	**829**	**1.50**
3100	**478**	**0.57**	**637**	**0.90**	**702**	**1.08**	**744**	**1.16**	**796**	**1.36**	**837**	**1.56**
3200	**500**	**0.62**	**647**	**0.97**	**712**	**1.16**	**753**	**1.23**	**805**	**1.43**	**845**	**1.63**
3300	**519**	**0.69**	**658**	**1.03**	**721**	**1.23**	**762**	**1.30**	**814**	**1.50**	**853**	**1.71**
3400	**537**	**0.77**	**669**	**1.10**	**731**	**1.30**	**773**	**1.38**	**823**	**1.57**	862	1.78
3500	**561**	**0.86**	**680**	**1.17**	**741**	**1.37**	**784**	**1.47**	**832**	**1.65**	871	1.86
3600	**592**	**0.98**	**692**	**1.24**	**751**	**1.45**	**796**	**1.57**	**841**	**1.72**	880	1.95
3700	**654**	**1.12**	**714**	**1.31**	**767**	**1.50**	**815**	**1.67**	861	1.85	906	2.08
3800	**668**	**1.20**	**727**	**1.40**	**780**	**1.60**	**827**	**1.77**	873	1.95	916	2.18
3900	**683**	**1.28**	**741**	**1.49**	**793**	**1.70**	**839**	**1.88**	884	2.05	927	2.28
4000	**697**	**1.37**	**754**	**1.59**	**806**	**1.80**	**851**	**1.99**	895	2.16	938	2.38
4100	**711**	**1.46**	**767**	**1.69**	**819**	**1.90**	864	2.10	907	2.28	949	2.49
4200	**726**	**1.56**	**780**	**1.80**	**832**	**2.01**	877	2.22	919	2.41	960	2.60
4300	**741**	**1.66**	**794**	**1.91**	**845**	**2.12**	889	2.35	931	2.54	971	2.72
4400	**755**	**1.77**	**808**	**2.03**	**858**	**2.24**	902	2.48	943	2.68	983	2.86
4500	**770**	**1.89**	**821**	**2.15**	871	2.37	915	2.61	955	2.82	995	3.01
4600	**784**	**2.00**	**835**	**2.27**	884	2.49	928	2.75	968	2.96	1006	3.17
4700	**799**	**2.13**	**849**	**2.40**	897	2.63	941	2.88	981	3.11	1018	3.32
4800	**814**	**2.25**	863	2.53	910	2.77	954	3.02	993	3.27	1030	3.48
4900	**829**	**2.39**	877	2.67	923	2.92	967	3.17	1006	3.43	1043	3.65
5000	**843**	**2.52**	892	2.81	937	3.08	980	3.32	1019	3.60	1055	3.82

50HJQ012 (10 TONS) — STANDARD MOTOR (BELT DRIVE) (cont)

Airflow (Cfm)	External Static Pressure (in. wg)							
	1.4		1.6		1.8		2.0	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
3000	886	1.73	943	1.88	988	1.91	995	1.95
3100	892	1.78	947	2.00	995	2.05	1008	2.07
3200	899	1.85	951	2.06	1000	2.17	1021	2.20
3300	907	1.93	959	2.10	1004	2.33	1036	2.36
3400	915	2.01	966	2.17	1009	2.46	1043	2.47
3500	924	2.09	974	2.24	1015	2.51	1054	2.59
3600	933	2.18	983	2.32	1023	2.58	1058	2.70
3700	950	2.27	991	2.47	1030	2.65	1064	2.82
3800	959	2.38	1001	2.58	1040	2.78	1075	2.96
3900	969	2.50	1010	2.70	1049	2.91	**1085**	**3.11**
4000	979	2.62	1020	2.83	1059	3.04	**1095**	**3.25**
4100	989	2.74	1029	2.96	1068	3.18	**1105**	**3.39**
4200	1000	2.86	1039	3.10	1077	3.31	**1114**	**3.54**
4300	1011	2.97	1049	3.23	**1087**	**3.46**	**1124**	**3.69**
4400	1022	3.10	1059	3.37	**1097**	**3.61**	**1133**	**3.84**
4500	1033	3.23	1070	3.51	**1107**	**3.76**	**1143**	**4.00**
4600	1044	3.37	**1081**	**3.64**	**1117**	**3.92**	**1152**	**4.17**
4700	1056	3.52	**1092**	**3.78**	**1127**	**4.07**	1162	4.33
4800	1057	3.69	**1103**	**3.93**	1138	4.23	1172	4.50
4900	1079	3.87	**1114**	**4.09**	1149	4.37	1182	4.68
5000	**1091**	**4.05**	1126	4.25	1160	4.53	1193	4.85

LEGEND

Bhp — Brake Horsepower Input to Fan

Refer to page 106 for general Fan Performance notes.

NOTES:

1. **Boldface** indicates a field-supplied drive is required. (See Note 4.)
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum continuous bhp is 4.20 with standard motor.
4. Standard motor drive range: 860 to 1080 rpm. All other rpms require field-supplied drive.

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS

50HJQ004 (3 TONS) — STANDARD MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)											
	0.1		0.2		0.3		0.4		0.5		0.6	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
900	**526**	**0.06**	**584**	**0.08**	**656**	**0.12**	**734**	**0.22**	818	0.25	875	0.27
1000	**570**	**0.09**	**627**	**0.13**	**738**	**0.19**	800	0.26	848	0.29	895	0.31
1100	**614**	**0.13**	**670**	**0.16**	**758**	**0.23**	812	0.29	863	0.32	914	0.35
1200	**658**	**0.16**	**710**	**0.23**	780	0.28	840	0.32	889	0.36	938	0.40
1300	**703**	**0.20**	**752**	**0.27**	808	0.32	868	0.37	916	0.41	963	0.45
1400	**725**	**0.29**	776	0.31	845	0.38	891	0.42	937	0.47	983	0.51
1500	**755**	**0.33**	816	0.38	870	0.43	924	0.48	969	0.53	1014	0.58

50HJQ004 (3 TONS) — STANDARD MOTOR (BELT DRIVE) (cont)

Airflow (Cfm)	External Static Pressure (in. wg)											
	0.7		0.8		0.9		1.0		1.1		1.2	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
900	924	0.32	953	0.35	989	0.38	1028	0.42	1074	0.49	**1120**	**0.54**
1000	936	0.35	977	0.39	1020	0.44	1064	0.48	**1124**	**0.54**	**1185**	**0.60**
1100	960	0.39	1005	0.43	1052	0.49	**1100**	**0.52**	**1163**	**0.59**	**1225**	**0.65**
1200	960	0.45	1038	0.50	1076	0.53	**1136**	**0.59**	**1201**	**0.65**	**1266**	**0.72**
1300	1012	0.51	1061	0.56	1090	0.61	**1172**	**0.65**	**1239**	**0.72**	**1306**	**0.79**
1400	1027	0.56	1071	0.60	**1108**	**0.67**	**1208**	**0.70**	**1278**	**0.79**	**1347**	**0.87**
1500	1056	0.63	**1097**	**0.68**	**1117**	**0.70**	**1245**	**0.74**	**1315**	**0.87**	**1385**	**0.96**

LEGEND

Bhp — Brake Horsepower Input to Fan

Refer to page 106 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates a field-supplied drive is required. (See Note 3.)
2. Maximum continuous bhp is 1.20.
3. Motor drive range: 760 to 1090 rpm. All other rpms require field-supplied drive.

50HJQ005 (4 TONS) — STANDARD MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)													
	0.1		0.2		0.3		0.4		0.6		0.7		0.8	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
1200	**514**	**0.15**	**590**	**0.20**	**657**	**0.25**	**723**	**0.30**	**828**	**0.42**	876	0.49	924	0.55
1300	**545**	**0.18**	**615**	**0.23**	**680**	**0.29**	**744**	**0.35**	849	0.47	895	0.54	940	0.60
1400	**577**	**0.21**	**642**	**0.27**	**704**	**0.33**	**766**	**0.39**	870	0.52	915	0.59	959	0.66
1500	**609**	**0.26**	**670**	**0.31**	**729**	**0.38**	**788**	**0.44**	892	0.58	936	0.65	980	0.72
1600	**642**	**0.30**	**699**	**0.36**	**755**	**0.43**	**811**	**0.49**	913	0.64	957	0.72	1001	0.79
1700	**675**	**0.36**	**728**	**0.42**	**782**	**0.49**	**836**	**0.55**	935	0.71	979	0.79	1023	0.86
1800	**709**	**0.41**	**759**	**0.48**	**810**	**0.55**	860	0.62	957	0.78	1001	0.86	1044	0.94
1900	**743**	**0.48**	**790**	**0.55**	**838**	**0.62**	886	0.69	980	0.86	1023	0.95	1066	1.03
2000	**778**	**0.55**	**836**	**0.62**	875	0.70	913	0.77	1004	0.94	1046	1.03	1088	1.12

50HJQ005 (4 TONS) — STANDARD MOTOR (BELT DRIVE) (cont)

Airflow (Cfm)	External Static Pressure (in. wg)											
	1.0		1.1		1.2		1.4		1.6		1.8	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
1200	999	0.66	1018	0.67	1036	0.68	1073	0.71	1109	0.75	1138	0.79
1300	1025	0.74	1058	0.79	1090	0.84	1121	0.87	1159	0.90	**1193**	**0.95**
1400	1042	0.81	1080	0.88	1118	0.95	1175	1.06	**1206**	**1.09**	**1244**	**1.12**
1500	1060	0.88	1098	0.96	1136	1.04	**1205**	**1.19**	1258	1.30	1289	1.34
1600	1080	0.95	1117	1.04	1153	1.12	1224	1.29	1287	1.45	1337	1.56
1700	1101	1.03	1137	1.12	1172	1.20	1241	1.38	1307	1.56	1366	1.73
1800	1122	1.11	1157	1.20	1192	1.29	1258	1.48	1323	1.67	1385	1.86
1900	1143	1.21	1179	1.30	1214	1.39	1279	1.58	1341	1.78	1402	1.98
2000	1165	1.31	1200	1.40	1235	1.49	1300	1.69	1361	1.90	1419	2.10

LEGEND

Bhp — Brake Horsepower Input to Fan

Refer to page 106 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates a field-supplied drive is required. (See Note 4.)
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum continuous bhp is 1.20.
4. Motor drive range: 840 to 1185 rpm. All other rpms require field-supplied drive.

Performance data (cont)

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

50HJQ006 (5 TONS) — STANDARD MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)									
	0.1		0.2		0.4		0.6		0.8	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
1500	**665**	**0.31**	**729**	**0.35**	**843**	**0.47**	**940**	**0.60**	1026	0.74
1600	**703**	**0.36**	**763**	**0.40**	**872**	**0.53**	**965**	**0.66**	1049	0.81
1700	**741**	**0.40**	**801**	**0.47**	**902**	**0.60**	**993**	**0.75**	1077	0.89
1800	**765**	**0.45**	**821**	**0.51**	**923**	**0.65**	**1019**	**0.81**	1099	0.96
1900	**802**	**0.45**	**854**	**0.58**	**953**	**0.73**	1046	0.90	1126	1.06
2000	**840**	**0.60**	**888**	**0.66**	**984**	**0.82**	1073	0.99	1154	1.16
2100	**878**	**0.69**	**923**	**0.75**	**1015**	**0.91**	1101	1.08	1182	1.27
2200	**916**	**0.78**	**958**	**0.85**	1046	1.01	1129	1.19	1209	1.39
2300	**954**	**0.89**	**993**	**0.96**	1079	1.13	1160	1.31	1237	1.51
2400	**993**	**1.00**	1029	1.07	1112	1.25	1190	1.43	1264	1.63
2500	1031	1.13	1066	1.20	1145	1.39	1220	1.57	1292	1.77

50HJQ006 (5 TONS) — STANDARD MOTOR (BELT DRIVE) (cont)

Airflow (Cfm)	External Static Pressure (in. wg)							
	1.0		1.2		1.4		1.6	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
1500	1108	0.89	1187	1.06	1202	1.18	1079	1.10
1600	1130	0.97	1206	1.14	1275	1.32	1281	1.44
1700	1152	1.05	1226	1.23	1298	1.41	1359	1.60
1800	1178	1.14	1249	1.32	1316	1.52	1382	1.72
1900	1201	1.23	1274	1.43	1338	1.62	1402	1.83
2000	1226	1.33	1297	1.53	1363	1.73	1424	1.94
2100	1252	1.45	1320	1.64	1388	1.85	1448	2.07
2200	1280	1.58	1345	1.77	1410	1.97	1473	2.20
2300	1309	1.71	1372	1.91	1434	2.11	1496	2.34
2400	1336	1.85	1400	2.06	1459	2.26	1519	2.48
2500	1363	2.00	1428	2.22	1486	2.43	1543	2.65

LEGEND

Bhp — Brake Horsepower Input to Fan

Refer to page 106 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates a field-supplied drive is required. (See Note 4.)
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum continuous bhp is 1.80.
4. Standard motor drive range: 1020 to 1460 rpm. All other rpms require field-supplied drive.

50HJQ007 (6 TONS) — STANDARD MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)									
	0.1		0.2		0.4		0.6		0.8	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
1800	**765**	**0.45**	**821**	**0.51**	**923**	**0.65**	**1019**	**0.81**	**1099**	**0.96**
1900	**802**	**0.45**	**854**	**0.58**	**953**	**0.73**	**1046**	**0.90**	1126	1.06
2000	**840**	**0.60**	**888**	**0.66**	**984**	**0.82**	**1073**	**0.99**	1154	1.16
2100	**878**	**0.69**	**923**	**0.75**	**1015**	**0.91**	**1101**	**1.08**	1182	1.27
2200	**916**	**0.78**	**958**	**0.85**	**1046**	**1.01**	1129	1.19	1209	1.39
2300	**954**	**0.89**	**993**	**0.96**	**1079**	**1.13**	1160	1.31	1237	1.51
2400	**993**	**1.00**	**1029**	**1.07**	**1112**	**1.25**	1190	1.43	1264	1.63
2500	**1031**	**1.13**	**1066**	**1.20**	1145	1.39	1220	1.57	1292	1.77
2600	**1070**	**1.26**	**1103**	**1.34**	1179	1.52	1251	1.71	1322	1.92
2700	**1109**	**1.41**	1140	1.48	1212	1.67	1283	1.87	1352	2.09
2800	1148	1.57	1177	1.64	1246	1.83	1316	2.04	1383	2.26
2900	1188	1.74	1215	1.81	1281	2.00	1349	2.22	1413	2.44
3000	1227	1.92	1253	2.00	1316	2.19	1382	2.42	1444	2.63

50HJQ007 (6 TONS) — STANDARD MOTOR (BELT DRIVE) (cont)

Airflow (Cfm)	External Static Pressure (in. wg)							
	1.0		1.2		1.4		1.6	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
1800	1178	1.14	1249	1.32	1316	1.52	1382	1.72
1900	1201	1.23	1274	1.43	1338	1.62	1402	1.83
2000	1226	1.33	1297	1.53	1363	1.73	1424	1.94
2100	1252	1.45	1320	1.64	1388	1.85	1448	2.07
2200	1280	1.58	1345	1.77	1410	1.97	1473	2.20
2300	1309	1.71	1372	1.91	1434	2.11	1496	2.34
2400	1336	1.85	1400	2.06	1459	2.26	1519	2.48
2500	1363	2.00	1428	2.22	1486	2.43	1543	2.65
2600	1390	2.15	1456	2.38	1514	2.61	1569	2.83
2700	1418	2.31	1483	2.56	1543	2.80	—	—
2800	1446	2.48	1510	2.73	—	—	—	—
2900	1476	2.67	1537	2.92	—	—	—	—
3000	1506	2.88	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan

Refer to page 106 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates a field-supplied drive is required. (See Note 4.)
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum continuous bhp is 2.40.
4. Standard motor drive range: 1120 to 1585 rpm. All other rpms require field-supplied drive.

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

50HJQ008 (7 1/2 TONS) — STANDARD MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
2250	**465**	**0.43**	**554**	**0.64**	**630**	**0.86**	**695**	**1.09**	757	1.34
2300	**471**	**0.45**	**559**	**0.66**	**635**	**0.89**	**699**	**1.12**	760	1.37
2400	**482**	**0.50**	**569**	**0.71**	**645**	**0.95**	**708**	**1.18**	768	1.44
2500	**494**	**0.54**	**581**	**0.76**	**654**	**1.01**	**717**	**1.25**	776	1.51
2550	**501**	**0.57**	**587**	**0.79**	**659**	**1.05**	**722**	**1.29**	780	1.55
2600	**507**	**0.59**	**592**	**0.82**	**663**	**1.08**	727	1.32	784	1.58
2700	**520**	**0.65**	**604**	**0.89**	**672**	**1.14**	737	1.40	793	1.66
2800	**533**	**0.71**	**615**	**0.95**	**683**	**1.20**	747	1.49	802	1.75
2900	**546**	**0.77**	**626**	**1.02**	**693**	**1.27**	756	1.57	813	1.84
3000	**559**	**0.83**	**637**	**1.09**	**704**	**1.35**	765	1.66	823	1.94
3100	**572**	**0.90**	**648**	**1.17**	**715**	**1.43**	775	1.74	832	2.05
3200	**585**	**0.96**	**660**	**1.24**	727	1.52	785	1.83	841	2.15
3300	**598**	**1.03**	**671**	**1.32**	739	1.62	795	1.91	851	2.26
3400	**610**	**1.10**	**682**	**1.41**	750	1.72	806	2.01	860	2.36
3500	**623**	**1.17**	**694**	**1.50**	761	1.82	817	2.11	870	2.47
3600	**636**	**1.25**	**707**	**1.60**	772	1.93	828	2.23	880	2.57
3700	**649**	**1.33**	**720**	**1.71**	783	2.03	840	2.35	890	2.69
3750	**655**	**1.37**	727	1.77	789	2.09	846	2.42	896	2.75

50HJQ008 (7 1/2 TONS) — STANDARD MOTOR (BELT DRIVE) (cont)

Airflow (Cfm)	External Static Pressure (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
2250	810	1.62	850	1.91	873	2.20	890	2.50	903	2.78
2300	816	1.65	859	1.94	888	2.24	897	2.55	922	2.85
2400	824	1.72	872	2.01	909	2.32	**931**	**2.64**	935	2.96
2500	832	1.79	882	2.09	925	2.40	**955**	**2.72**	972	3.06
2550	836	1.83	887	2.13	**931**	**2.45**	**964**	**2.77**	986	3.11
2600	839	1.87	891	2.17	**936**	**2.49**	**973**	**2.82**	999	3.16
2700	846	1.95	898	2.26	**946**	**2.58**	987	2.91	1019	3.26
2800	855	2.04	906	2.35	**954**	**2.67**	997	3.01	1034	3.36
2900	863	2.13	913	2.44	**961**	**2.77**	1006	3.12	—	—
3000	872	2.22	921	2.54	**969**	**2.88**	1014	3.22	—	—
3100	882	2.33	**930**	**2.65**	976	2.99	1021	3.34	—	—
3200	892	2.45	**939**	**2.76**	984	3.10	—	—	—	—
3300	902	2.57	**948**	**2.88**	993	3.21	—	—	—	—
3400	912	2.69	958	3.01	1002	3.34	—	—	—	—
3500	921	2.82	968	3.15	—	—	—	—	—	—
3600	930	2.95	978	3.29	—	—	—	—	—	—
3700	940	3.07	—	—	—	—	—	—	—	—
3750	945	3.14	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan

Refer to page 106 for general Fan Performance notes.

NOTES:
1. **Boldface** indicates a field-supplied drive is required. (See Note 4.)
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum continuous bhp is 2.90.
4. Standard motor drive range: 725 to 925 rpm. All other rpms require field-supplied drive.

Performance data (cont)

FAN PERFORMANCE — HORIZONTAL DISCHARGE UNITS (cont)

50HJQ012 (10 TONS) — STANDARD MOTOR (BELT DRIVE)

Airflow (Cfm)	External Static Pressure (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
3000	**459**	**0.35**	**595**	**0.74**	**657**	**0.88**	**716**	**1.05**	**770**	**1.24**
3100	**478**	**0.46**	**605**	**0.79**	**667**	**0.94**	**725**	**1.10**	**779**	**1.30**
3200	**500**	**0.57**	**615**	**0.85**	**679**	**1.01**	**734**	**1.16**	**787**	**1.36**
3300	**519**	**0.62**	**625**	**0.90**	**691**	**1.08**	**744**	**1.23**	**796**	**1.43**
3400	**537**	**0.69**	**637**	**0.97**	**702**	**1.16**	**753**	**1.30**	**805**	**1.50**
3500	**561**	**0.77**	**647**	**1.03**	**712**	**1.23**	**762**	**1.38**	**814**	**1.57**
3600	**592**	**0.86**	**658**	**1.10**	**721**	**1.30**	**773**	**1.47**	**823**	**1.65**
3700	**607**	**0.97**	**670**	**1.18**	**732**	**1.37**	**782**	**1.56**	**833**	**1.73**
3800	**621**	**1.05**	**681**	**1.25**	**742**	**1.45**	**795**	**1.66**	**842**	**1.82**
3900	**636**	**1.13**	**693**	**1.32**	**751**	**1.53**	**808**	**1.76**	**851**	**1.92**
4000	**650**	**1.21**	**705**	**1.40**	**761**	**1.61**	**819**	**1.86**	861	2.02
4100	**665**	**1.30**	**717**	**1.48**	**772**	**1.71**	**830**	**1.96**	871	2.13
4200	**680**	**1.39**	**728**	**1.57**	**783**	**1.81**	**839**	**2.05**	883	2.25
4300	**696**	**1.49**	**739**	**1.66**	**794**	**1.91**	**848**	**2.14**	896	2.38
4400	**711**	**1.60**	**750**	**1.75**	**805**	**2.02**	**857**	**2.24**	908	2.51
4500	**727**	**1.70**	**762**	**1.85**	**817**	**2.12**	867	2.35	919	2.63
4600	**742**	**1.82**	**774**	**1.96**	**828**	**2.23**	877	2.46	929	2.75
4700	**758**	**1.94**	**786**	**2.07**	**840**	**2.34**	888	2.59	938	2.87
4800	**773**	**2.06**	**799**	**2.18**	**852**	**2.46**	899	2.72	947	2.98
4900	**789**	**2.19**	**812**	**2.30**	863	2.57	910	2.86	957	3.11
5000	**805**	**2.32**	**826**	**2.43**	875	2.70	921	2.99	966	3.24

50HJQ012 (10 TONS) — STANDARD MOTOR (BELT DRIVE) (cont)

Airflow (Cfm)	External Static Pressure (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
3000	**822**	**1.44**	872	1.69	919	1.88	950	1.70	962	1.82
3100	**829**	**1.50**	882	1.73	932	2.00	965	1.80	971	1.95
3200	**837**	**1.56**	886	1.78	943	2.06	978	1.91	984	2.07
3300	**845**	**1.63**	892	1.85	947	2.10	988	2.05	995	2.20
3400	**853**	**1.71**	899	1.93	951	2.17	995	2.17	1008	2.32
3500	862	1.78	907	2.01	959	2.24	1000	2.33	1021	2.47
3600	871	1.86	915	2.09	965	2.32	1005	2.46	1036	2.59
3700	879	1.95	927	2.17	973	2.38	1013	2.57	1046	2.73
3800	889	2.03	934	2.26	980	2.48	1022	2.69	1058	2.87
3900	898	2.12	942	2.36	987	2.59	1030	2.81	1068	3.01
4000	908	2.21	950	2.46	994	2.70	1037	2.92	1077	3.14
4100	917	2.32	960	2.55	1001	2.81	1045	3.04	**1085**	**3.21**
4200	925	2.44	969	2.65	1009	2.92	1051	3.17	**1092**	**3.40**
4300	935	2.56	979	2.77	1018	3.03	1058	3.29	**1100**	**3.53**
4400	945	2.68	988	2.89	1028	3.14	1066	3.41	**1106**	**3.67**
4500	955	2.82	996	3.02	1037	3.25	1074	3.54	**1113**	**3.81**
4600	967	2.96	1005	3.16	1046	3.38	**1084**	**3.66**	**1121**	**3.95**
4700	980	3.11	1015	3.30	1056	3.52	**1093**	**3.79**	**1129**	**4.09**
4800	992	3.26	1025	3.45	1064	3.67	**1103**	**3.92**	1137	4.22
4900	1003	3.41	1036	3.61	1073	3.83	**1112**	**4.07**	1147	4.36
5000	1014	3.56	1049	3.79	**1083**	**4.00**	1121	4.23	1157	4.50

LEGEND

Bhp — Brake Horsepower Input to Fan

Refer to this page or general Fan Performance notes.

NOTES:
1. **Boldface** indicates a field-supplied drive is required. (See Note 4.)
2. ▭ indicates field-supplied motor and drive are required.
3. Maximum continuous bhp is 4.20 with standard motor.
4. Standard motor drive range: 860 to 1080 rpm. All other rpms require field-supplied drive.

GENERAL NOTES FOR FAN PERFORMANCE TABLES

1. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. For additional information on motor performance, refer to Indoor-Fan Motor Performance table on page 110.
2. Values include losses for filters, unit casing, and wet coils. See page 107 for accessory/FIOP static pressure information.
3. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
4. Interpolation is permissible. Do not extrapolate.

ACCESSORY/FIOP STATIC PRESSURE* (in. wg) — 50HJQ004-007

COMPONENT	CFM									
	900	1200	1400	1600	1800	2000	2200	2400	2600	3000
1 Heater Module	0.05	0.07	0.09	0.09	0.10	0.11	0.11	0.12	0.13	0.15
2 Heater Modules	0.15	0.16	0.16	0.16	0.17	0.17	0.17	0.18	0.18	0.19
Durablade Economizer	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
EconoMi$er	0.05	0.09	0.13	0.17	0.22	0.27	0.32	0.39	0.45	0.53

LEGEND

FIOP — Factory-Installed Option

*The static pressure must be added to external static pressure. The sum and the evaporator entering-air cfm should then be used in conjunction with the Fan Performance tables to determine blower rpm and watts.

ACCESSORY/FIOP STATIC PRESSURE* (in. wg) — 50HJQ008-012

COMPONENT	CFM									
	2250	2500	3000	3500	4000	4500	5000	5500	6000	6250
1 Heater Module	0.02	0.03	0.05	0.07	0.08	0.10	0.12	0.14	0.16	0.17
2 Heater Modules	0.03	0.05	0.07	0.09	0.12	0.14	0.16	0.19	0.21	0.20
Durablade Economizer	0.02	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.09
EconoMi$er	0.07	0.09	0.13	0.18	0.23	0.30	0.36	—	—	—

LEGEND

FIOP — Factory-Installed Option

*The static pressure must be added to external static pressure. The sum and the evaporator entering-air cfm should then be used in conjunction with the Fan Performance tables to determine blower rpm and watts.

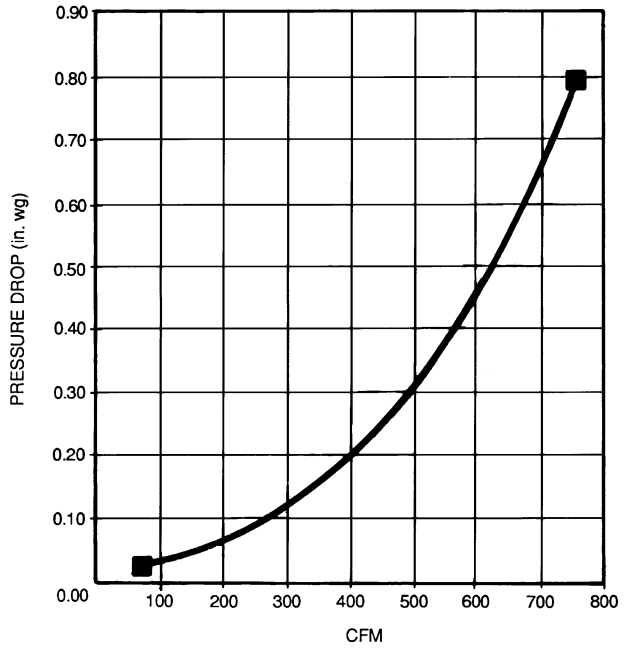
FAN RPM AT MOTOR PULLEY SETTINGS* — 50HJQ004-012

UNIT 50HJQ	MOTOR PULLEY TURNS OPEN												
	0	1/2	1	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6
004	1090	1055	1025	990	960	925	890	860	825	795	760	—	—
005	1185	1150	1115	1080	1045	1015	980	945	910	875	840	—	—
006	1460	1425	1385	1350	1315	1275	1240	1205	1165	1130	1095	1055	1020
007	1585	1540	1490	1445	1400	1350	1305	1260	1210	1165	1120	—	—
008	925	905	888	865	845	825	805	785	765	745	725	—	—
012	1080	1060	1035	1015	990	970	950	925	905	880	860	—	—

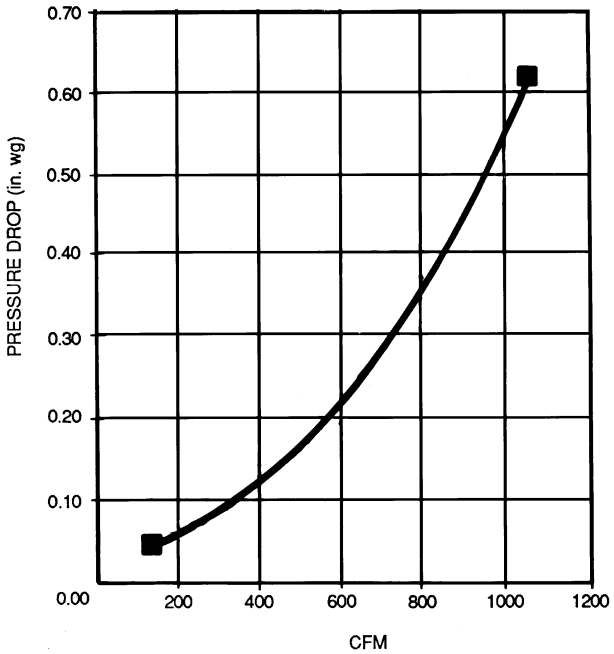
*Approximate fan rpm shown.

Performance data (cont)

DURABLADE ECONOMIZER BAROMETRIC RELIEF DAMPER CHARACTERISTICS — 50HJQ004-007



DURABLADE ECONOMIZER BAROMETRIC RELIEF DAMPER CHARACTERISTICS — 50HJQ008-012

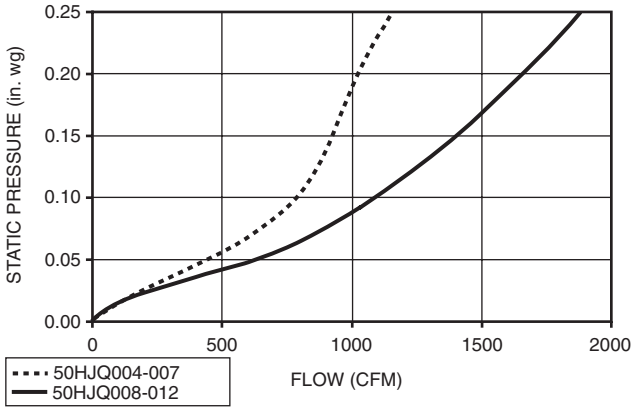


OPTIONAL POWER EXHAUST
POWER REQUIREMENTS

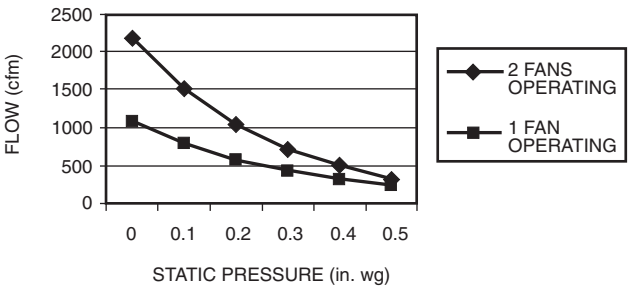
UNIT SIZE	AMPS @ 230 V (2 Fans Running)	MOCP		
		230 VAC	460 VAC	575 VAC
50HJQ004-007	1.40 Amps @ 60 Hz	15.0 amps	15.0 amps	15.0 amps
50HJQ008,012	3.04 Amps @ 60 Hz			

MOCP — Maximum Overcurrent Protection

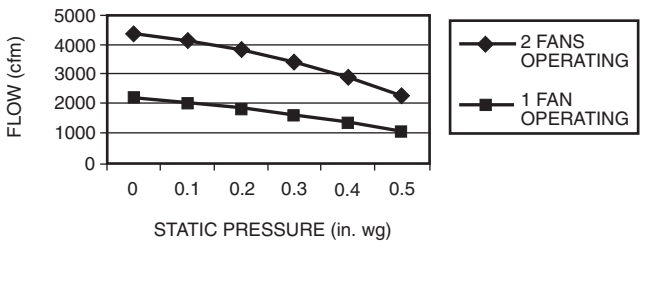
ECONOMI$ER BAROMETRIC RELIEF DAMPER CHARACTERISTICS



ECONOMI$ER POWER EXHAUST PERFORMANCE (50HJQ004-007)



ECONOMI$ER POWER EXHAUST PERFORMANCE (50HJQ008-012)



ELECTRIC HEATING CAPACITIES

UNIT 50HJQ	VOLTAGE (60 Hz)	ACCESSORY kW	ACCESSORY HEATER PART NUMBER CRHEATER---A00	ACCESSORY SINGLE POINT BOX PART NO. CRSINGLE---A00
004	208/230 (single phase)	4.4	101	—
		6.5	102	—
		8.7	103	—
		10.5	104	002
		13.0*	102*	002
	208/230 (3 phase)	4.4	101	—
		6.5	102	—
		8.7	103	—
		10.5	104	—
		16.0	105	—
	460 (3 phase)	6.0	106	—
		8.8	107	—
		11.5	108	—
		14.0	109	—
005	208/230 (single phase)	4.4	101	—
		8.7	103	—
		13.0*	102*	002
		17.4*	103*	002
		21.0*	104*	002
	208/230 (3 phase)	6.5	102	—
		8.7	103	—
		16.0	105	—
		21.0*	104*	002
	460 (3 phase)	6.0	106	—
		11.5	108	—
		14.0	109	—
		23.0*	108*	—
006	208/230 (single phase)	6.5	102	—
		8.7	103	002
		13.0*	102*	002
		17.4*	103*	002
		21.0*	104*	002
	208/230 (3 phase)	6.5	102	—
		10.5	104	—
		16.0	105	002
		21.0*	104*	002
		26.5*	105,104	002
	460 (3 phase)	6.0	106	—
		11.5	108	—
		14.0	109	—
		23.0*	108*	—
		25.5*	109,108	—
007	208/230 (3 phase)	6.5	102	—
		10.5	104	—
		16.0	105	002
		21.0*	104*	002
		26.5*	105,104	002
	460 (3 phase)	6.0	106	—
		11.5	108	—
		14.0	109	—
		23.0*	108*	—
		25.5*	109,108	—

ELECTRIC HEATING CAPACITIES (cont)

UNIT 50HJQ	VOLTAGE (60 Hz)	ACCESSORY kW	ACCESSORY HEATER PART NUMBER CRHEATER---A00	ACCESSORY SINGLE POINT BOX PART NO. CRSINGLE---A00
008	208/230 (3 phase)	10.4	117	006
		16.0	110	006
		24.8	111	007
		32.0	112	007
		42.4*	112,117	007
	460 (3 phase)	13.9	116	006
		16.5	113	006
		27.8	114	006
		33.0	115	006
		41.7*	114,116	008
012	208/230 (3 phase)	10.4	117	011
		16.0	110	011
		32.0	112	012
		42.4*	112,117	015
		50.0*	112,110	015
	460 (3 phase)	16.5	113	011
		27.8	114	011
		33.0	115	011†
		41.7*	114,116	014
		50.0*	115,113	014

*Two heater packages required to provide kW indicated.
†On units with factory-installed outlet, use CRSINGLE014A00.

NOTES: The kW ratings shown above are at 240 and 480 v. Use the Multiplication Factors table to determine heater capacity for your particular voltage.

MULTIPLICATION FACTORS

HEATER kW RATING	VOLTAGE DISTRIBUTION V/3/60	MULTIPLICATION FACTOR
240	200	.69
	208	.75
	230	.92
	240	1.00
480	440	.84
	460	.92
	480	1.00

EXAMPLE: 32.0 kW (at 240 v) heater on 208 v
= 32.0 (.75 mult factor)
= 24.0 kW capacity at 208 v.

OUTDOOR SOUND POWER (TOTAL UNIT)

50HJQ	ARI RATING (60 Hz)	OCTAVE BANDS; Lw (A)							
		63	125	250	500	1000	2000	4000	8000
004,005	7.6	50.8	63.4	62.2	65.9	69.2	65.9	63.0	56.5
006,007	8.0	57.6	70.2	66.9	71.7	74.7	72.2	67.8	62.4
008	8.2	62.3	69.3	71.5	74.7	76.2	72.9	68.7	61.5
012	8.4	64.6	71.1	73.3	76.9	77.6	73.7	70.6	63.7

ARI — Air Conditioning and Refrigeration Institute
Lw (A) — Unit A — Weighted Sound Power Level

Performance data (cont)

INDOOR-FAN MOTOR DATA — 50HJQ004-012

UNIT 50HJQ	UNIT PHASE	MAXIMUM CONTINUOUS BHP*	MAXIMUM OPERATING WATTS*	UNIT VOLTAGE	MAXIMUM AMP DRAW	MOTOR EFFICIENCY (%)
004	Single	1.20	1000	208/230	5.1	75
	Three	1.20	1000	208/230	5.1	
				460	2.3	
005	Single	1.20	1000	208/230	5.1	75
	Three	1.20	1000	208/230	5.1	
				460	2.3	
006	Single	1.80	1921	208/230	9.2	74
	Three	1.80	1921	208/230	6.1	
				460	2.7	
007	Three	2.40	2120	208/230	6.1	84
				460	2.7	
008	Three	2.90	2615	208/230	7.9	80
				460	3.6	
012	Three	4.20	3775	208/230	11.1	85
				460	5.0	

LEGEND

Bhp — Brake Horsepower Input to Fan

*Extensive motor and electrical testing on these units ensures that the full horsepower and watts range of the motors can be utilized with confidence. Using your fan motors up to the ratings shown in this table will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.

Electrical data

UNITS WITHOUT ELECTRICAL CONVENIENCE OUTLET

UNIT	NOMINAL VOLTAGE (V-Ph-Hz)	VOLTAGE RANGE		COMPRESSOR		OFM	IFM	ELECTRIC HEAT*		POWER SUPPLY		MINIMUM UNIT DISCONNECT SIZE	
		Min	Max	RLA	LRA	FLA	FLA	kW†	FLA	MCA	MOCP	FLA	LRA
50HJQ004 (3 Tons)	208/230-1-60	187	254	16.0	88.0	0.7	4.9	—/— 3.3/ 4.4 4.9/ 6.5 6.5/ 8.7 7.9/10.5 9.8/13.0	—/— 15.9/18.3 23.6/27.1 31.3/36.3 38.0/43.8 47.1/54.2	25.6/ 25.6 45.5/ 48.5 55.1/ 59.5 64.7/ 71.0 73.1/ 80.4 84.5/ 93.4	30/ 30** 50/ 50** 60/ 60** 70/ 80 80/ 90 90/100	25/ 25 43/ 46 52/ 56 61/ 67 69/ 75 79/ 87	101/101 117/120 125/128 133/138 139/145 148/155††
	208/230-3-60	187	254	10.3	77.0	0.7	4.9	—/— 3.3/ 4.4 4.9/ 6.5 6.5/ 8.7 7.9/10.5 12.0/16.0	—/— 9.2/10.6 13.6/15.6 18.0/20.9 21.9/25.3 33.3/38.5	18.5/ 18.5 30.0/ 31.7 35.5/ 38.0 41.0/ 44.6 45.9/ 50.1 60.1/ 66.6	20/ 20** 30/ 35** 40/ 40** 45/ 45** 50/ 60** 70/ 70	18/ 18 29/ 30 34/ 36 39/ 42 43/ 47 57/ 63	90/ 90 99/101 104/106 108/111 112/116 124/129
	460-3-60	414	508	5.1	39.0	0.4	2.2	— 6.0 8.8 11.5 14.0	— 7.2 10.6 13.8 16.8	9.0 18.0 22.2 26.2 30.0	15** 20** 25** 30** 30**	9 17 21 25 28	46 53 57 60 63
50HJQ005 (4 Tons)	208/230-1-60	187	254	23.7	129.0	0.7	4.9	—/— 3.3/ 4.4 6.5/ 8.7 9.8/13.0 13.1/17.4 15.8/21.0	—/— 15.9/18.3 31.3/36.3 47.1/54.2 63.0/72.5 76.0/87.5	35.2/ 35.2 55.1/ 58.1 74.4/ 80.6 94.1/103.0 114.0/125.9 130.2/144.6	40/ 40** 60/ 60** 80/ 90 100/110 125/150 150/150	34/ 34 52/ 55 70/ 75 88/ 96 106/117 121/134	142/142 158/161 174/179 189/196†† 205/215†† 218/230††
	208/230-3-60	187	254	13.5	99.0	0.7	4.9	—/— 4.9/ 6.5 6.5/ 8.7 12.0/16.0 15.8/21.0	—/— 13.6/15.6 18.0/20.9 33.3/38.5 43.9/50.5	22.5/ 22.5 39.5/ 42.0 45.0/ 48.6 64.1/ 70.6 77.4/ 85.6	25/ 25** 40/ 45** 45/ 50** 70/ 80 90/100	22/ 22 38/ 40 43/ 46 60/ 66 72/ 80	112/112 126/128 130/133 146/151 156/163
	460-3-60	414	508	7.4	49.5	0.4	2.2	— 6.0 11.5 14.0 23.0	— 7.2 13.8 16.8 27.7	11.9 20.9 29.1 32.9 46.5	15** 25** 30** 35** 50**	12 20 27 31 43	57 64 70 73 84
50HJQ006 (5 Tons)	208/230-1-60	187	254	28.8	169.0	1.5	8.8	—/— 4.9/ 6.5 6.5/ 8.7 9.8/13.0 13.1/17.4 15.8/21.0	—/— 23.6/27.1 31.3/36.3 47.1/54.2 63.0/72.5 76.0/87.5	46.3/ 46.3 75.8/ 80.2 85.4/ 91.7 105.2/114.1 125.1/136.9 141.3/155.7	50/ 50** 80/ 90 90/100 110/125 150/150 150/175	45/ 45 72/ 76 81/ 87 99/107 117/128 132/146	216/216 240/243 247/252†† 263/270†† 279/289†† 292/304††
	208/230-3-60	187	254	17.3	123.0	1.5	5.8	—/— 4.9/ 6.5 7.9/10.5 12.0/16.0 15.8/21.0 19.9/26.5	—/— 13.6/15.6 21.9/25.3 33.3/38.5 43.9/50.5 55.2/63.8	28.9/ 28.9 45.9/ 48.4 56.3/ 60.6 70.6/ 77.1 83.8/ 92.1 97.9/108.7	30/ 30** 50/ 50** 60/ 70 80/ 80 90/100 100/110	28/ 28 44/ 46 53/ 57 67/ 73 79/ 86 92/102	168/168 181/183 190/193 201/208 212/218†† 223/232††
	460-3-60	414	508	9.0	62.0	0.8	2.6	— 6.0 11.5 14.0 23.0 25.5	— 7.2 13.8 16.8 27.7 30.7	14.7 23.7 31.9 35.7 49.3 53.0	15** 25** 35** 40** 50** 60**	14 23 30 34 46 50	84 92 98 101 112 115
50HJQ007 (6 Tons)	208/230-3-60	187	254	20.5	156.0	1.4	5.8	—/— 4.9/ 6.5 7.9/10.5 12.0/16.0 15.8/21.0 19.9/26.5	—/— 13.6/15.6 21.9/25.3 33.3/38.5 43.9/50.5 55.2/63.8	32.8/ 32.8 49.8/ 52.3 60.2/ 64.5 74.5/ 81.0 87.7/ 96.0 101.8/112.6	35/ 35** 50/ 60** 70/ 70 80/ 90 90/100 110/125	32/ 32 47/ 50 57/ 61 70/ 76 82/ 90 95/105	200/200 214/216 222/225 233/239 244/251†† 255/264††
	460-3-60	414	508	9.6	70.0	0.6	2.6	— 6.0 11.5 14.0 23.0 25.5	— 7.2 13.8 16.8 27.7 30.7	15.2 24.2 32.5 36.2 49.8 53.6	20** 25** 35** 40** 50** 60**	15 23 31 34 47 50	92 99 106 109 120 123

Electrical data (cont)

UNITS WITHOUT ELECTRICAL CONVENIENCE OUTLET (cont)

UNIT	NOMINAL VOLTAGE (V-Ph-Hz)	VOLTAGE RANGE		COMPRESSOR		OFM	IFM	ELECTRIC HEAT*		POWER SUPPLY		MINIMUM UNIT DISCONNECT SIZE	
		Min	Max	RLA	LRA	FLA	FLA	kW†	FLA	MCA	MOCP	FLA	LRA
50HJQ008* (7 1/2 Tons)**	208/230-3-60	187	254	12.4	88.0	1.4	7.5	—/—	—/—	38.2/ 38.2	40/ 40**	40/ 40	242/242
								7.8/10.4	21.7/ 25.0	65.3/ 69.5	70/ 70	65/ 69	264/267
								12.0/16.0	33.3/ 38.5	79.8/ 86.3	80/ 90	79/ 85	275/281††
								18.6/24.8	51.6/ 59.7	102.7/112.8	110/125	100/109	294/302††
								24.0/32.0	66.6/ 77.0	121.5/134.5	125/150	117/129	309/319††
								31.8/42.4	88.3/102.0	148.6/165.7	150/175	142/158	330/344††
	460-3-60	414	508	6.4	44.0	0.7	3.4	—	—	19.2	20**	20	121
								13.9	16.7	40.1	45**	39	138
								16.5	19.8	44.0	45**	43	141
								27.8	33.4	61.0	70	59	155
								33.0	39.7	68.8	70	66	161
								41.7	50.2	82.0	90	78	171
50HJQ012* (10 Tons)**	208/230-3-60	187	254	19.3	123.0	1.4	10.6	—/—	—/—	56.8/ 56.8	60/ 60**	60/ 60	337/337
								7.8/10.4	21.7/ 25.0	84.0/ 88.1	90/ 90	85/ 89	358/362††
								12.0/16.0	33.3/ 38.5	98.5/105.0	100/110	98/104	370/375††
								24.0/32.0	66.6/ 77.0	140.1/153.1	150/175	136/148	403/414††
								31.8/42.4	88.3/102.0	167.2/184.3	175/200	161/177	425/439††
								37.6/50.0	104.4/120.3	187.3/177.1	200/200	180/198	441/457††
	460-3-60	414	508	10.0	62.0	0.7	4.8	—	—	28.7	30	30	170
								16.5	19.8	53.3	60	53	189
								27.8	33.4	70.5	80	69	203
								33.0	39.7	78.3	80	76	209
								41.7	50.2	91.5	100	88	220††
								50.0	60.1	88.8	100	99	230††

LEGEND AND NOTES FOR ELECTRICAL DATA TABLES

LEGEND

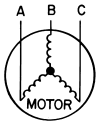
FLA — Full Load Amps
HACR — Heating, Air Conditioning and Refrigeration
IFM — Indoor Fan Motor
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
MOCP — Maximum Overcurrent Protection
NEC — National Electrical Code
OFM — Outdoor Fan Motor
RLA — Rated Load Amps

*Used to determine minimum disconnect per NEC.
†Heater capacity (kW) is based on heater voltage of 208 v, and 480 v. If power istribution voltage to unit varies from rated heater voltage, heater kw will vary accordingly.
**Fuse or HACR circuit breaker.
††Optional disconnect switch cannot be used.
***Units have 2 outdoor fan motors.

NOTES:
1. In compliance with NEC requirements for multimotor and combination load and equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker.
2. **Unbalanced 3-Phase Supply Voltage**
   Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percent of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 460-3-60.



AB = 452 v
BC = 464 v
AC = 455 v

$$\text{Average Voltage} = \frac{452 + 464 + 455}{3}$$

$$= \frac{1371}{3}$$

$$= 457$$

Determine maximum deviation from average voltage.
(AB) 457 – 452 = 5 v
(BC) 464 – 457 = 7 v
(AC) 457 – 455 = 2 v

Maximum deviation is 7 v.

Determine percent of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{7}{457}$$

$$= 1.53\%$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

UNITS WITH ELECTRICAL CONVENIENCE OUTLET

UNIT	NOMINAL VOLTAGE (V-Ph-Hz)	VOLTAGE RANGE		COMPRESSOR		OFM	IFM	ELECTRIC HEAT*		POWER SUPPLY		MINIMUM UNIT DISCONNECT SIZE	
		Min	Max	RLA	LRA	FLA	FLA	kW†	FLA	MCA	MOCP	FLA	LRA
50HJQ004 (3 Tons)	208/230-1-60	187	254	16.0	88.0	0.7	4.9	—/— 3.3/ 4.4 4.9/ 6.5 6.5/ 8.7 7.9/10.5 9.8/13.0	—/— 15.9/18.3 23.6/27.1 31.3/36.3 38.0/43.8 47.1/54.2	30.4/ 30.4 50.3/ 53.3 59.9/ 64.3 69.5/ 75.8 77.9/ 85.2 89.3/ 98.2	35/ 35** 60/ 60** 60/ 70 70/ 80 80/ 90 90/100	30/ 30 49/ 51 58/ 62 66/ 72 74/ 81 85/ 93	106/106 122/124 130/133 137/142 144/150†† 153/160††
	208/230-3-60	187	254	10.3	77.0	0.7	4.9	—/— 3.3/ 4.4 4.9/ 6.5 6.5/ 8.7 7.9/10.5 12.0/16.0	—/— 9.2/10.6 13.6/15.6 18.0/20.9 21.9/25.3 33.3/38.5	23.3/ 23.3 34.8/ 36.5 40.3/ 42.8 45.8/ 49.4 50.7/ 54.9 64.9/ 71.4	25/ 25** 35/ 40** 45/ 45** 50/ 50** 60/ 60** 70/ 80	24/ 24 34/ 36 39/ 42 45/ 48 49/ 53 62/ 68	95/ 95 104/106 109/111 113/116 117/120 128/134
	460-3-60	414	508	5.1	39.0	0.4	2.2	— 6.0 8.8 11.5 14.0	— 7.2 10.6 13.8 16.8	11.2 20.2 24.4 28.4 32.2	15** 25** 25** 30** 35**	11 20 24 27 31	48 55 59 62 65
50HJQ005 (4 Tons)	208/230-1-60	187	254	23.7	129.0	0.7	4.9	—/— 3.3/ 4.4 6.5/ 8.7 9.8/13.0 13.1/17.4 15.8/21.0	—/— 15.9/18.3 31.3/36.3 47.1/54.2 63.0/72.5 76.0/87.5	40.0/ 40.0 59.9/ 62.9 79.2/ 85.4 98.9/107.8 118.8/130.7 135.0/149.4	45/ 45** 60/ 70 80/ 90 100/110 125/150 150/150	39/ 39 58/ 60 75/ 81 93/102 112/123 127/140	147/147 163/165 178/183†† 194/201†† 210/220†† 223/235††
	208/230-3-60	187	254	13.5	99.0	0.7	4.9	—/— 4.9/ 6.5 6.5/ 8.7 12.0/16.0 15.8/21.0	—/— 13.6/15.6 18.0/20.9 33.3/38.5 43.9/50.5	27.3/ 27.3 44.3/ 46.8 49.8/ 53.4 68.9/ 75.4 82.2/ 90.4	30/ 30** 45/ 50** 50/ 60** 70/ 80 90/100	27/ 27 43/ 45 48/ 52 66/ 72 78/ 86	117/117 131/133 135/138 150/156 161/168††
	460-3-60	414	508	7.4	49.5	0.4	2.2	— 6.0 11.5 14.0 23.0	— 7.2 13.8 16.8 27.7	14.0 23.0 31.3 35.0 48.7	15** 25** 35** 40** 50**	14 22 30 33 46	59 66 73 76 86
50HJQ006 (5 Tons)	208/230-1-60	187	254	28.8	169.0	1.5	8.8	—/— 4.9/ 6.5 6.5/ 8.7 9.8/13.0 13.1/17.4 15.8/21.0	—/— 23.6/27.1 31.3/36.3 47.1/54.2 63.0/72.5 76.0/87.5	51.1/ 51.1 80.6/ 85.0 90.2/ 96.5 110.0/118.9 129.9/141.7 146.1/160.5	60/ 60** 90/ 90 100/100 110/125 150/150 150/175	50/ 50 78/ 82 86/ 92 105/113 123/134 138/151	221/221 245/248†† 252/257†† 268/275†† 284/293†† 297/308††
	208/230-3-60	187	254	17.3	123.0	1.5	5.8	—/— 4.9/ 6.5 7.9/10.5 12.0/16.0 15.8/21.0 19.9/26.5	—/— 13.6/15.6 21.9/25.3 33.3/38.5 43.9/50.5 55.2/63.8	33.7/ 33.7 50.7/ 53.2 61.1/ 65.4 75.4/ 81.9 88.6/ 96.9 102.7/113.5	35/ 35** 60/ 60** 70/ 70 80/ 90 90/100 110/125	34/ 34 49/ 52 59/ 63 72/ 78 84/ 92 97/107	173/173 186/188 194/198 206/211 216/223†† 228/236††
	460-3-60	414	508	9.0	62.0	0.8	2.6	— 6.0 11.5 14.0 23.0 25.5	— 7.2 13.8 16.8 27.7 30.7	16.8 25.8 34.1 37.8 51.5 55.2	20** 30** 35** 40** 60** 60**	17 25 33 36 49 52	87 94 100 103 114 117
50HJQ007 (6 Tons)	208/230-3-60	187	254	20.5	156.0	1.4	5.8	—/— 4.9/ 6.5 7.9/10.5 12.0/16.0 15.8/21.0 19.9/26.5	—/— 13.6/15.6 21.9/25.3 33.3/38.5 43.9/50.5 55.2/63.8	37.6/ 37.6 54.6/ 57.1 65.0/ 69.3 79.3/ 85.8 92.5/100.8 106.6/117.4	40/ 40** 60/ 60** 70/ 70 80/ 90 100/110 110/125	37/ 37 53/ 55 63/ 66 76/ 82 88/ 95 101/111	205/205 219/221 227/230 238/243†† 249/255†† 260/269††
	460-3-60	414	508	9.6	70.0	0.6	2.6	— 6.0 11.5 14.0 23.0 25.5	— 7.2 13.8 16.8 27.7 30.7	17.4 26.4 34.6 38.4 52.0 55.8	20** 30** 35** 40** 60** 60**	17 26 33 37 49 53	94 101 108 111 122 125

Electrical data (cont)

UNITS WITH ELECTRICAL CONVENIENCE OUTLET (cont)

UNIT	NOMINAL VOLTAGE (V-Ph-Hz)	VOLTAGE RANGE		COMPRESSOR		OFM	IFM	ELECTRIC HEAT*		POWER SUPPLY		MINIMUM UNIT DISCONNECT SIZE	
		Min	Max	RLA	LRA	FLA	FLA	kW†	FLA	MCA	MOCP	FLA	LRA
50HJQ008*** (7 1/2 Tons)	208/230-3-60	187	254	12.4	88.0	1.4	7.5	—/—	—/—	43.0/ 43.0	45/ 45**	46/ 46	247/247
								7.8/10.4	21.7/ 25.0	70.1/ 74.3	80/ 80	71/ 75	269/272
								12.0/16.0	33.3/ 38.5	84.6/ 91.1	90/100	84/ 90	280/285††
								18.6/24.8	51.6/ 59.7	107.5/117.6	110/125	105/115	298/307††
								24.0/32.0	66.6/ 77.0	126.3/139.3	150/150	122/134	313/324††
								31.8/42.4	88.3/102.0	153.4/170.5	175/175	147/163	335/349††
	460-3-60	414	508	6.4	44.0	0.7	3.4	—	—	21.4	25**	23	123
								13.9	16.7	42.3	45**	42	140
								16.5	19.8	46.1	50**	46	143
								27.8	33.4	63.1	70	61	157
								33.0	39.7	71.0	80	68	163
								41.7	50.2	84.1	90	80	174††
50HJQ012*** (10 Tons)	208/230-3-60	187	254	19.3	123.0	1.4	10.6	—/—	—/—	61.6/ 61.6	70/ 70	65/ 65	341/341
								7.8/10.4	21.7/ 25.0	88.8/ 92.9	90/100	90/ 94	363/366††
								12.0/16.0	33.3/ 38.5	103.3/109.6	110/110	104/110	375/380††
								24.0/32.0	66.6/ 77.0	144.9/157.9	150/175	142/154	408/418††
								31.8/42.4	88.3/102.0	172.0/189.1	175/200	167/183	430/443††
								37.6/50.0	104.4/120.3	192.1/181.9	200/200	185/204	446/462††
	460-3-60	414	508	10.0	62.0	0.7	4.8	—	—	30.9	35**	33	172
								16.5	19.8	55.6	60**	55	191
								27.8	33.4	72.6	80	71	205
								33.0	39.7	80.5	90	78	211
								41.7	50.2	93.6	100	90	222††
								50.0	60.1	91.0	100	102	232††

LEGEND AND NOTES FOR ELECTRICAL DATA TABLES

LEGEND

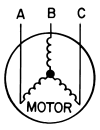
FLA — Full Load Amps
HACR — Heating, Air Conditioning and Refrigeration
IFM — Indoor Fan Motor
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
MOCP— Maximum Overcurrent Protection
NEC — National Electrical Code
OFM — Outdoor Fan Motor
RLA — Rated Load Amps

*Used to determine minimum disconnect per NEC.
†Heater capacity (kW) is based on heater voltage of 208 v, and 480 v. If power istribution voltage to unit varies from rated heater voltage, heater kw will vary accordingly.
**Fuse or HACR circuit breaker.
††Optional disconnect switch cannot be used.
***Units have 2 outdoor fan motors.

NOTES:
1. In compliance with NEC requirements for multimotor and combination load and equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker.
2. **Unbalanced 3-Phase Supply Voltage**
   Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percent of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 460-3-60.



AB = 452 v
BC = 464 v
AC = 455 v

$$\text{Average Voltage} = \frac{452 + 464 + 455}{3}$$

$$= \frac{1371}{3}$$

$$= 457$$

Determine maximum deviation from average voltage.
(AB) 457 – 452 = 5 v
(BC) 464 – 457 = 7 v
(AC) 457 – 455 = 2 v

Maximum deviation is 7 v.

Determine percent of voltage imbalance.

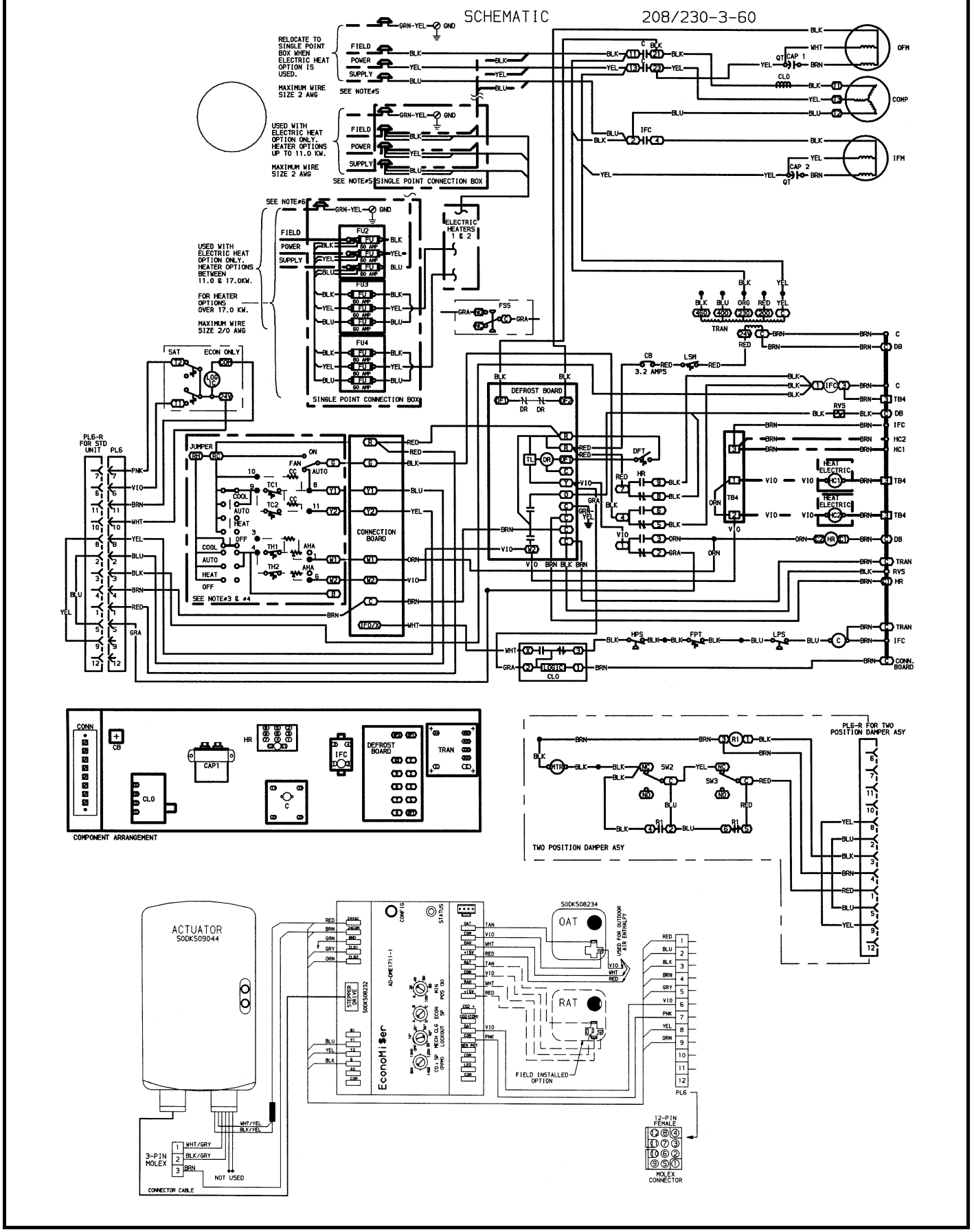
$$\% \text{ Voltage Imbalance} = 100 \times \frac{7}{457}$$

$$= 1.53\%$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

Typical wiring schematic — 50HJQ004-012



Typical wiring schematic — 50HJQ004-012

LEGEND FOR TYPICAL WIRING SCHEMATIC

IMPORTANT: Consult unit wiring label for actual wiring schematic.

AHA — Adjustable Heat Anticipator
AWG — American Wire Gage
C — Contactor, Compressor
CAP — Capacitor
CB — Circuit Breaker
CC — Cooling Compensator
CLO — Compressor Lockout
COMP — Compressor Motor
D — Diode
DB — Defrost Board
DFT — Defrost Thermostat
EC — Enthalpy Control
ECON — Economizer
EPS — Emergency Power Supply
ER — Economizer Relay
FPT — Freeze-Up Protection Thermostat
FSS — Filter Status Switch
FU — Fuse
GND — Ground
HC — Heater Contactor (Strip Heat)
HPS — High-Pressure Switch
HR — Heater Relay
IFC — Indoor-Fan Contactor
IFM — Indoor-Fan Motor
LPS — Low-Pressure Switch
LSM — Limit Switch (Manual Reset)
MTR — Motor
OAT — Outdoor-Air Thermostat
OFM — Outdoor-Fan Motor
P — Plug
PL — Plug Assembly
QT — Quadruple Terminal
R — Relay
RVS — Reversing Valve Solenoid
SAT — Supply Air Thermostat
SW1 — Switch, Fully Open
SW2 — Switch, Fully Closed
SW3 — Switch, Minimum Vent Position
SW4 — Switch, Maximum Vent Position
TB — Terminal Block
TC — Thermostat-Cooling
TH — Thermostat-Heating
TRAN — Transformer

Field Splice

Marked Wire

Terminal (Marked)

Terminal (Unmarked)

Terminal Block

Splice

Splice (Marked)

Factory Wiring

Field Control Wiring

Field Power Wiring

Accessory or Optional Wiring

To indicate common potential only, not to represent wiring

NOTES:
1. If any of the original wire furnished must be replaced, it must be replaced with type 90 C wire or its equivalent.
2. Three phase motors are protected under primary single phasing conditions.
3. Thermostat:
   HH07AT170, 172, 174 & P272-2783
   Subbase:
   HH93AZ176, 178 & P272-1882, 1883.
4. Set heat anticpator at .8 amp for 1st stage & .3 amp for 2nd stage.
5. Use copper conductors only.
6. Use copper, copper clad aluminum. or aluminum conductors.
7.

VOLTAGE RATING	CB HFG. PT. NO.	MUST TRIP AMPS
24V	POTTER & BRUNFIELD	
	W2BX-1024-3.2	3.2

Guide specifications — 50HJQ004-012

Packaged Rooftop Air-to-Air Heat Pump — Constant Volume Application

HVAC Guide Specifications

Size Range: **3 to 10 Tons, Nominal (Cooling)**
34,000 to 114,000 Btuh, Nominal (Input Heating)

Carrier Model Number: **50HJQ**

Part 1 — General

1.01 SYSTEM DESCRIPTION

Outdoor rooftop mounted, electrically controlled air-to-air heat pump unit utilizing a scroll compressor for cooling duty and electric resistance coils for heating duty. Unit shall discharge supply air vertically or horizontally as shown on contract drawings.

1.02 QUALITY ASSURANCE

A. Unit shall be rated in accordance with ARI Standards 210/240 or 360 and 270. Designed in accordance with UL Standard 1995.

B. Unit shall be designed to conform to ASHRAE 15, latest revision.

C. Unit shall be UL-tested and certified in accordance with ANSI Z21.47 Standards and UL-listed and certified under Canadian standards as a total package for safety requirements.

D. Roof curb shall be designed to conform to NRCA Standards.

E. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.

F. Unit casing shall be capable of withstanding 500-hour salt spray exposure per ASTM B117 (scribed specimen).

G. Unit shall be designed in accordance with ISO 9001, and shall be manufactured in a facility registered to ISO 9001:2000.

H. Each unit shall be subjected to a completely automated run testing on the assembly line. Units contain a factory-supplied printout indicating tested pressures, amperages, data, and inspectors; providing certification of the unit status at the time of manufacture.

1.03 DELIVERY, STORAGE, AND HANDLING

Unit shall be stored and handled per manufacturer's recommendations.

Part 2 — Products

2.01 EQUIPMENT (STANDARD)

A. General:

Factory assembled, single-piece heat pump unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, refrigerant charge (R-22), and special features required prior to field start-up.

B. Unit Cabinet:

1. Unit cabinet shall be constructed of galvanized steel, and shall be bonderized and coated with a prepainted baked enamel finish on all externally exposed surfaces.
2. Evaporator fan compartment interior cabinet surfaces shall be insulated with a minimum $1/2$-in. thick, 1 lb. density, flexible fiberglass insulation, neoprene coated on the air side. Aluminum foil-faced fiberglass insulation shall be used in the gas heat compartment.
3. Cabinet panels shall be easily removable for servicing.
4. Holes shall be provided in the base rails for rigging shackles to facilitate maneuvering and overhead rigging.
5. Unit shall have a factory-installed, sloped condensate drain pan made of a non-corrosive material, providing a minimum $3/4$-in-14 NPT. connection with both vertical and horizontal drains, and shall comply with ASHRAE Standard 62.
6. Unit shall have a factory-installed filter access panel to provide filter access with tool-less removal.
7. Unit shall have standard thru-the-bottom power connection capability (accessory kit is required).

C. Fans:

1. Indoor Fan:
   a. Fan shall be direct or belt driven as shown on the equipment drawings. Belt drive shall include an adjustable-pitch motor pulley.
   b. Fan wheel shall be double-inlet type with forward-curved blades.
   c. Bearings shall be sealed, permanently lubricated ball-bearing type for longer life and lower maintenance.
2. Indoor fan shall be made from steel with a corrosion-resistant finish and shall be dynamically balanced.
3. Outdoor fan shall be of the direct-driven (with totally enclosed motors) propeller type and shall discharge air vertically.
4. Outdoor fan shall have aluminum blades riveted to corrosion-resistant steel spiders and shall be dynamically balanced.

D. Compressor(s):

1. Fully hermetic type, internally protected scroll-type.
2. Factory mounted on rubber grommets and internally spring mounted for vibration isolation.
3. On independent circuits (008,012).

E. Coils:
   1. Standard indoor and outdoor coils shall have copper or aluminum plate fins mechanically bonded to seamless internally grooved copper tubes with all joints brazed.
   2. Coils:
      a. Copper-fin coils shall be constructed of copper fins mechanically bonded to copper tubes and copper tube sheets. Galvanized steel tube sheets shall not be acceptable. A polymer strip shall prevent coil assembly from contacting the sheet metal coil pan to minimize potential for galvanic corrosion between coil and pan. All copper construction shall provide protection in moderate coastal environments.
      b. E-Coated aluminum-fin coils shall have a flexible epoxy polymer coating uniformly applied to all coil surface areas without material bridging between fins. Coating process shall ensure complete coil encapsulation. Color shall be high gloss black with gloss — 60 deg of 65 to 90% per ASTM D523-89. Uniform dry film thickness from 0.8 to 1.2 mil on all surface areas including fin edges. Superior hardness characteristics of 2H per ASTM D3363-92A and cross-hatch adhesion of 4B-5B per ASTM D3359-93. Impact resistance shall be up to 160 in.-lb (ASTM D2794-93). Humidity and water immersion resistance shall be up to minimum 1000 and 250 hours respectively (ASTM D2247-92 and ASTM D870-92). Corrosion durability shall be confirmed through testing to be no less than 1000 hours salt spray per ASTM B117-90. Coil construction shall be aluminum fins mechanically bonded to copper tubes.
      c. E-Coated copper-fin coils shall have a flexible epoxy polymer coating uniformly applied to all coil surface areas without material bridging between fins. Coating process shall ensure complete coil encapsulation. Color shall be high gloss black with gloss — 60 deg of 65 to 90% per ASTM D523-89. Uniform dry film thickness from 0.8 to 1.2 mil on all surface areas including fin edges. Superior hardness characteristics of 2H per ASTM D3363-92A and cross-hatch adhesion of 4B-5B per ASTM D3359-93. Impact resistance shall be up to 160 in.-lb (ASTM D2794-93). Humidity and water immersion resistance shall be up to minimum 1000 and 250 hours respectively (ASTM D2247-92 and ASTM D870-92). Corrosion durability shall be confirmed through testing to be no less than 1000 hours salt spray per ASTM B117-90. Coil construction shall be copper fins mechanically bonded to copper tubes with copper tube sheets. Galvanized steel tube sheets shall not be acceptable. A polymer strip shall prevent coil assembly from contacting sheet metal coil pan to maintain coating integrity and minimize corrosion potential between coil and pan.
      d. Optional pre-coated aluminum-fin coils shall have a durable epoxy-phenolic coating to provide protection in mildly corrosive coastal environments. Coating shall be applied to the aluminum fin stock prior to the fin stamping process to create an inert barrier between the aluminum fin and copper tube. Epoxy-phenolic barrier shall minimum galvanic action between dissimilar metals.

F. Heating Section:
   1. May be equipped with field-installed electric resistance heater(s) of the characteristics shown in the equipment schedule.
   2. Heater elements shall be open wire, adequately supported and insulated with ceramic bushings.

G. Refrigerant Components:

   Refrigerant circuit components shall include:
   1. Fixed orifice metering system (Acutrol™).
   2. Refrigerant filter drier.
   3. Reversing valve.
   4. Service gage connections on suction, discharge, and liquid lines.

H. Filter Section:
   1. Standard filter section shall consist of factory-installed, low velocity, throwaway 2-in. thick fiberglass filters of commercially available sizes.
   2. Filter face velocity shall not exceed 320 fpm at nominal airflows.
   3. Filter section should use only one size filter.
   4. Filters shall be accessible through an access panel with “no-tool” removal.

I. Controls and Safeties:
   1. Unit Controls:

      Unit shall be complete with self-contained low-voltage control circuit protected by a fuse on the 24-v transformer side (008-012 units have a resettable circuit breaker).
   2. Safeties:
      a. Unit shall incorporate a solid-state compressor protector which provides anti-cycle reset capability at the space thermostat, should any of the following standard safety devices trip and shut off compressor.
         1) Compressor overtemperature, overcurrent.
         2) Loss-of-charge/low-pressure switch.
         3) Freeze-protection thermostat, evaporator coil.
         4) High-pressure switch.
         5) Automatic reset motor thermal overload protector.

The lockout protection shall be easily disconnected at the control board, if necessary.

b. Heating section shall be provided with the following minimum protections:
   1) High-temperature limit switches.
   2) Overcurrent protection.

c. Unit shall incorporate an outdoor coil defrost system to prevent excessive frost accumulation during heating duty, and shall be controlled as follows:
   1) Defrost shall be initiated on the basis of time and coil temperature.
   2) A 30/50/90-minute timer shall activate defrost cycle only if the coil temperature is low enough to indicate a heavy frost condition.
   3) Defrost cycle shall terminate when defrost thermostats are satisfied and shall have a positive termination time of 10 minutes.

J. Operating Characteristics:
   1. Unit shall be capable of starting and running at 125 F ambient outdoor temperature, meeting maximum load criteria of ARI Standard 210/240 or 360 at ± 10% voltage.
   2. Compressor with standard controls shall be capable of operation down to 25 F (in cooling mode) ambient outdoor temperature.
   3. Compressor with standard controls shall be capable of operation down to –20 F (in heating mode) ambient outdoor temperature.
   4. Unit shall be capable of simultaneous heating duty and defrost cycle operation when using accessory electric heaters.

K. Electrical Requirements:

   All unit power wiring shall enter unit cabinet at a single factory-predrilled location.

L. Motors:
   1. Compressor motors shall be cooled by refrigerant gas passing through motor windings and shall have line break thermal and current overload protection.
   2. Indoor-fan motor shall have permanently lubricated bearings and inherent automatic-reset thermal overload protection.
   3. Totally enclosed outdoor-fan motor shall have permanently lubricated bearings, and inherent automatic-reset thermal overload protection.

M. Special Features:

   Certain features are not applicable when the features designated * are specified. For assistance in amending the specifications, contact your local Carrier Sales Office.

   * 1. Carrier PremierLink™ Controls:
      a. Shall be available as a factory-installed or as a field-installed accessory.
      b. Shall work with CCN and ComfortVIEW™ software.
      c. Shall be compatible with *Comfort*Link™ controllers.
      d. Shall be ASHRAE 62-99 compliant.
      e. Shall accept a CO_2 sensor in the conditioned space — Demand Control Ventilation (DCV) Ready.
      f. Shall have baud communication rate of 38.4K or faster.
      g. Shall be Internet Ready.
      h. Shall include an integrated economizer controller.

   * 2. Direct Digital Controls (Apollo):
      a. Shall be available as a factory-installed option.
      b. Shall actively monitor all modes of operation, as well as evaporator-fan status, filter status, indoor-air quality, supply-air temperature, and outdoor-air temperature.
      c. Shall work with Carrier TEMP and VVT® systems.
      d. Shall have built-in diagnostics for thermostat commands for both staged heating and cooling, evaporator-fan operation, and economizer operation.
      e. Shall be equipped with a 5-minute time delay between modes of operation.

   3. Roof Curbs (Horizontal and Vertical):
      a. Formed galvanized steel with wood nailer strip and shall be capable of supporting entire unit weight.
      b. Permits installation and securing of ductwork to curb prior to mounting unit on the curb.

   * 4. Integrated Economizers:
      a. Integrated integral modulating type capable of simultaneous economizer and compressor operation.
      b. Includes all hardware and controls to provide cooling with outdoor air.
      c. Equipped with low-leakage dampers, not to exceed 3% leakage at 1 in. wg pressure differential.
      d. Capable of introducing up to 100% outdoor air.
      e. EconoMi$er shall be equipped with a barometric relief damper.
      f. Designed to close damper(s) during loss-of-power situations with emergency power supply (Durablade economizer) or spring return built into motor (EconoMi$er).

g. Dry bulb outdoor-air temperature sensor shall be provided as standard. Enthalpy, differential temperature, and differential enthalpy control shall be provided as an option.

h. Durablade economizer is a guillotine-style damper, and the EconoMi$er is a gear-driven parallel blade design.

i. EconoMi$er shall provide control of internal building pressure through its accessory two-stage power exhaust function.

j. EconoMi$er shall be capable of control from a 4 to 20 mA signal.

5. Manual Outdoor-Air Damper:

Manual damper package shall consist of damper, birdscreen, and rainhood which can be preset to admit up to 50% outdoor air for year round ventilation.

* 6. 100% Two-Position Damper:

a. Two-position damper package shall include single blade damper and motor. Admits up to 100% outdoor air.

b. Damper shall close upon indoor (evaporator) fan shutoff.

c. Designed to close damper during loss of power situations.

d. Equipped with 15% barometric relief damper.

* 7. 25% Two-Position Damper:

a. Two-position damper package shall include single blade damper and motor. Admits up to 25% outdoor air.

b. Damper shall close upon indoor fan shutoff.

* 8. Head Pressure Control Package:

Consists of solid-state control and condenser-coil temperature sensor to maintain condensing temperature between 90 F and 110 F at outdoor ambient temperatures down to –20 F by condenser-fan speed modulation or condenser-fan cycling and wind baffles.

9. Electric Resistance Heaters:

a. Open wire nichrome elements with all necessary safety operating controls.

b. UL listed and indicated on basic unit information plate.

c. Available in multiples to match heating requirements.

d. Single point kits available for each heater when required.

*10. Electronic Programmable Thermostat:

Capable of using deluxe full-featured electronic thermostat. Shall use built-in compressor cycle delay control for both heating and cooling duty. Capable of working with Carrier direct digital controls.

*11. Thermostat and Subbase:

Provides staged cooling and heating automatic (or manual) changeover, fan control, and indicator light.

*12. Condenser Coil Hail Guard Assembly:

Hail guard shall protect against damage from hail and flying debris.

13. Unit-Mounted, Non-Fused Disconnect Switch:

Shall be factory-installed, internally mounted. NEC and UL approved non-fused switch shall provide unit power shutoff. Shall be accessible from outside the unit and shall provide power off lockout capability.

14. Convenience Outlet:

Shall be factory-installed and internally mounted with easily accessible 115-v female receptacle. Shall include 15 amp GFI receptacle with independent fuse protection. Voltage required to operate convenience outlet shall be provided by a factory-installed step-down transformer. Shall be accessible from outside the unit.

15. Outdoor Coil Grille:

The grille protects the outdoor coil from damage by large objects without increasing unit clearances.

16. Compressor Cycle Delay:

Unit shall be prevented from restarting for minimum of 5 min. after shutdown.

17. Thru-the-Bottom Utility Connectors:

Kit shall provide connectors to permit electrical connections to be brought to the unit through the basepan.

18. Fan/Filter Status Switch:

Provides status of indoor (evaporator) fan (ON/OFF) or filter (CLEAN/DIRTY). Status shall be displayed over communication bus when used with direct digital controls or with an indicator light at the thermostat.

19. Energy$Recycler:

The package shall be an outdoor rooftop or surface mounted, electronically controlled, air-to-air heat pump unit utilizing a hermetic compressor for cooling and heating duty.

The Energy$Recycler shall recover energy from building exhaust air and pre-condition ventilation air to allow higher ventilation requirements and minimizing energy cost.

This option shall be available with the following:

a. A mounting kit for the Energy$Recycler for cantilever mounting off of the rooftop unit with out the use of a slab or a roof curb.

b. A supplementary supply air fan kit to provide increased air movement into the 62AQ unit.

c. A field-installed 460v to 308/230v transformer to provide power when the Energy$Recycler is used with a 460V rooftop unit.

20. EconoMi$er with Power Exhaust:

    Package shall provide control of internal building pressure. The two-stage system shall exhaust up to 100% of return air (vertical only).

21. Two-Stage Power Exhaust Accessory for EconoMi$er:

    Power exhaust shall be used in conjunction with EconoMi$er to provide system exhaust of up to 100% of return air. The power exhaust is a field-installed accessory (vertical and horizontal applications).

    The individual fans are energized through the end switches located in the actuator, which will open as the outdoor-air damper opens. These end switches are factory set for 30 and 70% of outdoor-air, and can be set to meet specific job requirements.

22. Outdoor Air Enthalpy Sensor:

    The outdoor air enthalpy sensor shall be used with the EconoMi$er device to provide single enthalpy control. When used in conjunction with a return air enthalpy sensor, the EconoMi$er device will provide differential enthalpy control. The sensor allows the EconoMi$er controller to determine if outside air is suitable for free cooling.

23. Return Air Enthalpy Sensor:

    The return air enthalpy sensor shall be used with the EconoMi$er device. When used in conjunction with an outdoor air enthalpy sensor, the EconoMi$er device will provide differential enthalpy control.

24. Return Air Temperature Sensor:

    The return air temperature sensor shall be used with the EconoMi$er device. When used in conjunction with the standard outdoor air temperature sensor, the EconoMi$er device will provide differential temperature control.

25. Indoor Air Quality (CO_2) Sensor:
    a. Shall have the ability to provide demand ventilation indoor air quality (IAQ) control through the economizer with an IAQ sensor.
    b. The IAQ sensor shall be available in duct mount, wall mount, and wall mount with LED display. The set point shall have adjustment capability.

26. Power Exhaust Auxiliary Transformer:

    Field-installed 460v or 575v to 230v transformer to provide power to the 230v power exhaust when attached to a 460v or 575v rooftop unit.

27. Ultra-Violet Germicidal Lamps:

    Ultra-violet germicidal lamps are designed to Eliminate odor causing mold and fungus that may develop in the wet area of the evaporator section of the unit. The high output, low temperature germicidal lamps are field installed in the evaporator section of the unit, aimed at the evaporator coil and condensate pan. The short wave-length ultra-violet light inhibits and kills mold, fungus and microbial growth. The lamps have an output rating at 45 F in 400 fpm airflow of 120 microwatts/cm^2 at 1 meter.

28. Hinged Panel Option:

    Hinged panel option provide hinged access panels for the filter, compressor, evaporator fan, and control box areas. Filter hinged panels permit tool-less entry for changing filters. Each hinged panel is permanently attached to the rooftop unit.

29. Emergency Heat Control Package:

    When mechanical heating is locked out, auxiliary heat shall be activated when necessary.

Model number nomenclature — 50HJQ014,016 units

50 HJQ 016 Z - C 6 1 1 YA

50 – Electric Cooling

HJQ – High Efficiency Heat Pump

Normal Capacity
014 – 13 Tons
016 – 15 Tons

Service/Control Options
- – Standard Controls
G – Service Option
J – Hinged Access Panels
S – Hinged Access Panels with Apollo Controls
Y – Service Option with Apollo Control
Z – Apollo Control

Fan Drive Motor
- – Standard Motor

Factory Installed Option Code*

Packaging
1 – Domestic

Design Series
1 – Gear Driven EconoMi$er Design Change

Voltage Designation
1 – 575-3-60
5 – 208/230-3-60
6 – 460-3-60

Coil Protection Options
- – Al/Cu Outdoor & Indoor Coils
B – Cu/Cu Outdoor & Indoor Coils
C – Cu/Cu Outdoor & Al/Cu Indoor Coils
F – E-Coated Al/Cu
G – E-Coated Cu/Cu
V – Precoated Outdoor Coil

*Refer to 50HJQ price pages or contact your local Carrier representative for 50HJQ code table.

Quality Assurance

Carrier Corporation UL REGISTERED FIRM ISO 9001:2000 #A2260

BSI REGISTERED FIRM

Certificate No FM 21837

Approvals:

ISO 9001

EN 9000:2000

ARI* capacity ratings

50HJQ014,016 UNITS

UNIT 50HJQ	COOLING					HEATING-HIGH TEMP			HEATING-LOW TEMP			SOUND RATING (Bels)
	Total kW	Net Capacity (Btuh)	Cfm	IPLV	EER	Total Capacity (Btuh)	Total kW	COP	Total Capacity (Btuh)	Total kW	COP	
014	14.3	140,000	4500	12.4	9.8	136,000	12.4	3.2	72,000	10.0	2.1	8.7
016	18.5	172,000	5200	9.7	9.3	172,000	15.3	3.3	90,000	12.5	2.2	8.8

LEGEND

COP — Coefficient of Performance
db — Dry Bulb
EER — Energy Efficiency Ratio
ESP — External Static Pressure
IPLV — Integrated Part-Load Value
kW — Kilowatts
wb — Wet Bulb

*Air-Conditioning and Refrigeration Institute.

NOTES:

50HJQ units are rated in accordance with ARI Standard 340.

Cooling ratings are net values, reflecting the effects of circulating fan heat. Ratings are based on:
ESP: –.35 in. wg

Cooling Standard: 80 F db, 67 wb indoor coil entering-air temperature and 95 F outdoor entering-air temperature.

High-Temp Heating Standard: 70 F db indoor coil entering-air temperature and 47 F db, 43 F wb outdoor coil entering-air temperature.

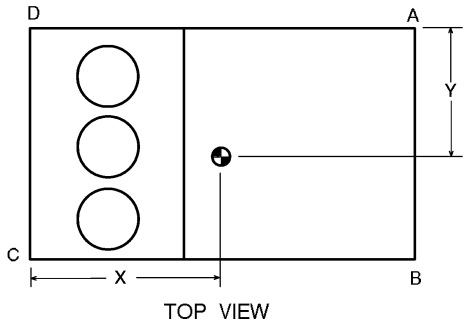
Low-Temp Heating Standard: 70 F db indoor coil entering-air temperature and 17 F db, 15 F wb outdoor coil entering-air temperature.

IPLV Standard: 80 F db, 67 F wb indoor entering-air temperature and 80 F db outdoor entering-air temperature.

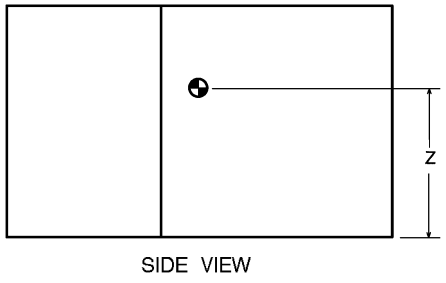
ALL the 50HJQ and 50TFQ004,005 and 006 units are in compliance with ASHRAE 90.1 2001 Energy Standard for minimum SEER and EER requirements. Refer to state and local codes or visit the following website: http://solstice.crest.org/efficiency/bcap to determine if compliance with this standard pertains to a given geographical area of the United States.

California, Maryland, Washington, Wyoming, Massachusetts and various local and state building codes adopted the ASHRAE 90.1 efficiency standard on October 29, 2001.

Physical data



TOP VIEW



SIDE VIEW

WEIGHT DISTRIBUTION AND CENTER OF GRAVITY

UNIT 50HJQ	WEIGHT		WEIGHT OF CORNER								DIMENSIONS					
	Lb	Kg	A		B		C		D		X		Y		Z	
			Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg	ft-in.	mm	ft-in.	mm	ft-in.	mm
014	1615	733	366	166	356	161	360	163	534	242	3′-1″	947	3′-2″	965	1′-10″	559
016	1925	874	464	211	496	225	477	217	487	221	3′-6″	1059	3′-8″	1105	1′-10″	559

Physical data — 50HJQ014,016

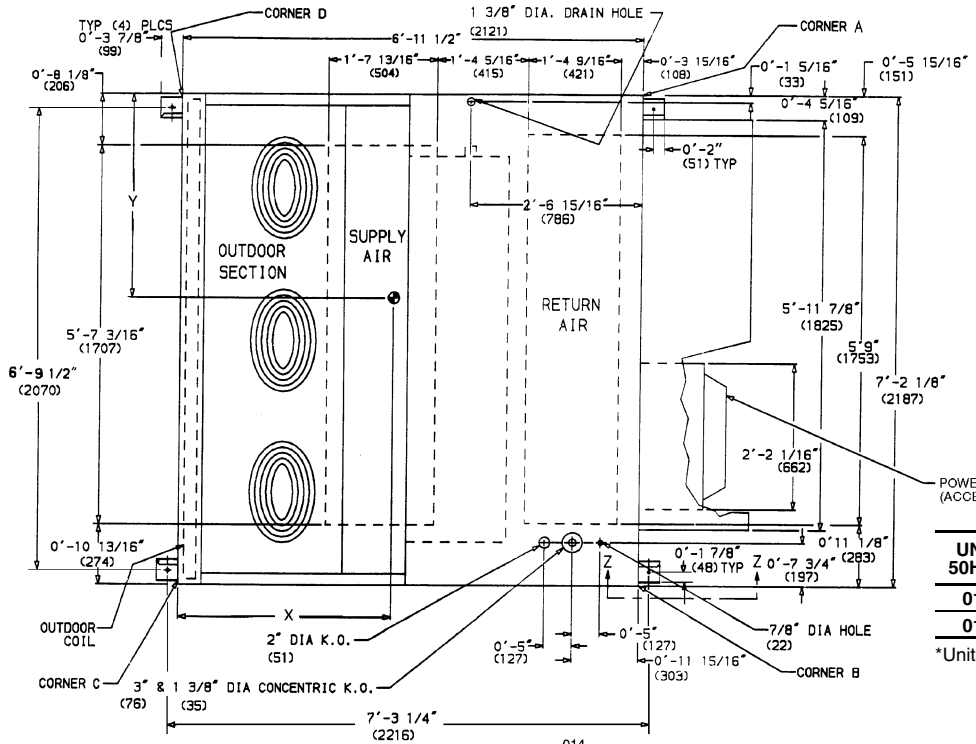
UNIT SIZE 50HJQ		014		016
		203/230 V, 460 V	575 V	
OPERATING WT (lb)				
Unit		1615		1925
Electric Heat		65		65
Economizer		110		110
Roof Curb*		200		200
COMPRESSOR		Semi-Hermetic		
Model Number (Quantity)		06D-328 (1)		06D-818 (2)
Cylinders		6		4
Capacity Staging (%)		0,66,100		0,50,100
Oil Change (oz)		11		88 (each)
REFRIGERANT TYPE		R-22		
Charge (lb)				
System 1		26.0		16.5
System 2		—		16.5
OUTDOOR COIL		3/8 in. Enhanced Copper Tubes, Aluminum Lanced or Copper Plate Fins		
Rows		3		3
Fins/in.		15		15
Total Face Area (sq ft)		21.7		21.7
OUTDOOR FAN		Propeller Type, Direct Drive		
Nominal Cfm		9,000		9,000
Number...Diameter (in.)		3...22		3...22
Motor Hp (1075 Rpm)		1/2		1/2
Watts Input (Total)		1090		1090
INDOOR COIL		3/8-in. Enhanced Copper Tubes, Aluminum Double Wavy or Copper Plate Fins, Face Split		
Rows		3		3
Fins/in.		15		15
Total Face Area (sq ft)		17.5		17.5
INDOOR FAN		Centrifugal, Adjustable Pitch Belt Drive		
Quantity...Size (in.)		2...10 x 10	2...10 x 10	2...12 x 12
Nominal Cfm		5000	5000	6000
Fan Rpm Range	**STD**	891-1179	1159-1429	817-1038
	ALT	1227-1559	—	1082-1303
Motor Nominal Rpm		1725	1550	1745
Maximum Allowable Rpm		1550	—	1550
Motor Pulley Pitch Diameter (in.)	**STD**	3.1-4.1	4.3-5.3	3.7-4.7
	ALT	3.7-4.7	—	4.9-5.9
Fan Pulley Pitch Diameter (in.)	**STD**	6.0	6.4	7.9
	ALT	5.2	—	7.9
Belt, Quantity...Type...Length (in.)	**STD**	1...BX...42	1...BX...45	1...BX...46
	ALT	1...BX...42	—	1...BX...50
Pulley Center Line Distance (in.)		13.5-15.5	13.5-15.5	13.3-14.8
Factory Setting		3.5	3.5	3.5
Factory Speed Setting	**STD**	1035	1296	934
	ALT	1389	—	1199
Motor Hp (Service Factor)		3.7 (1.15)	3.0 (1.15)	5 (1.15)
Motor Frame Size		56H	56H	184T
Motor Efficiency		0.86	0.82	0.875
HIGH-PRESSURE SWITCH				
Cutout (psig)		426		
Reset (psig)		320		
LOW-PRESSURE/LOSS-OF-CHARGE SWITCH				
Cutout (psig)		7		
Reset (psig)		22		
FREEZE PROTECTION THERMOSTAT (F)				
Opens		30 ± 5		
Closes		45 ± 5		
AIR INLET SCREENS		Cleanable		
Economizer, Quantity...Size (in.)		2...20 x 25 x 1 1...20 x 20 x 1		
RETURN-AIR FILTERS (Type)		10% Efficient — 2-in. Throwaway Fiberglass		
Quantity...Size (in.)		4...20 x 20 x 2 4..16 x 20 x 2		
POWER EXHAUST		1/2 Hp 208/230 or 460 V Motor, Direct Drive Propeller Fan (Factory Wired for 460 V)		

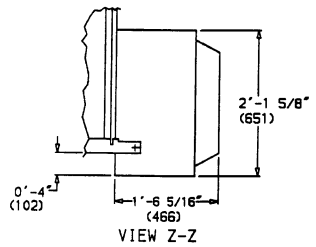
LEGEND

Al — Aluminum
Cu — Copper

*Weight of 14 in. roof curb.

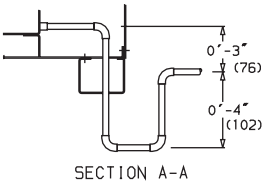
Base unit dimensions — 50HJQ014,016

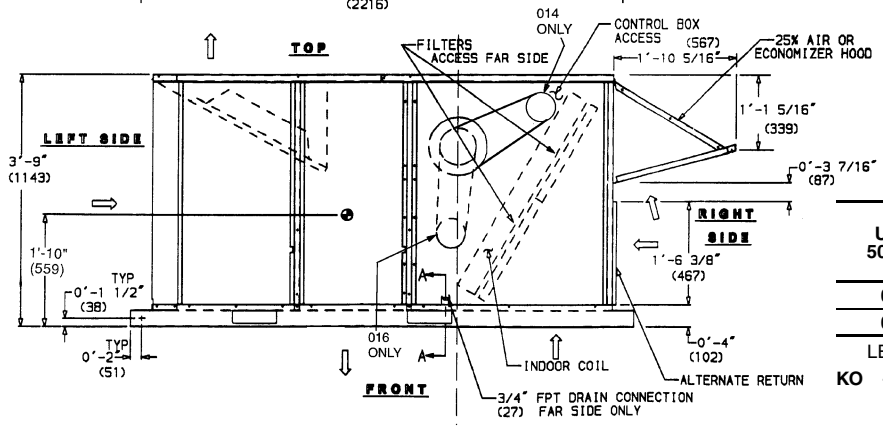




UNIT 50HJQ	MAXIMUM SHIPPING WEIGHT*	
	Lb	Kg
014	1895	860
016	2205	1000

*Units with aluminum indoor and outdoor coil fins.

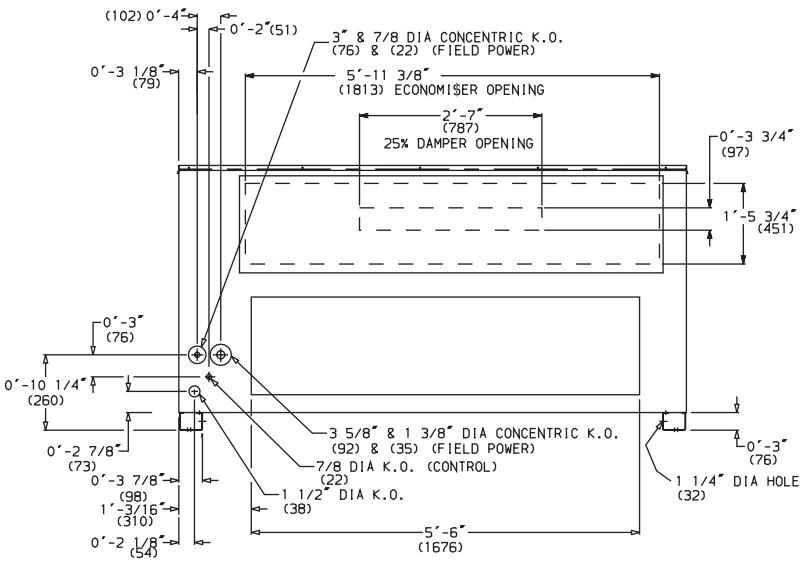




UNIT 50HJQ	DIMENSIONS			
	X		Y	
	Ft-in.	mm	Ft-in.	mm
014	3-1	947	3-2	965
016	3-6	1059	3-8	1105

LEGEND

KO — Knockout



NOTES:

1. Dimensions in [ ] are in millimeters.
2. Center of gravity.
3. Direction of airflow.
4. Ductwork to be attached to accessory roof curb only.
5. Minimum clearance:
   a. Rear: 7′-0″ (2134) for coil removal. This dimension can be reduced to 4′-0″ (1219) if conditions permit coil removal from the top.
   b. Left side: 4′-0″ (1219) for proper outdoor coil airflow.
   c. Front: 4′-0″ (1219) for control box access.
   d. Right side: 4′-0″ (1219) for proper operation of damper and power exhaust (if so equipped).
   e. Top: 6′-0″ (1829) to assure proper outdoor fan operation.
   f. Local codes or jurisdiction may prevail.
6. With the exception of clearance for the outdoor coil and the damper and power exhaust as stated in note no. 5, a removable fence or barricade requires no clearance.
7. Dimensions are from outside of corner post. Allow 0′-5/16″ (8) on each side for top cover drip edge.

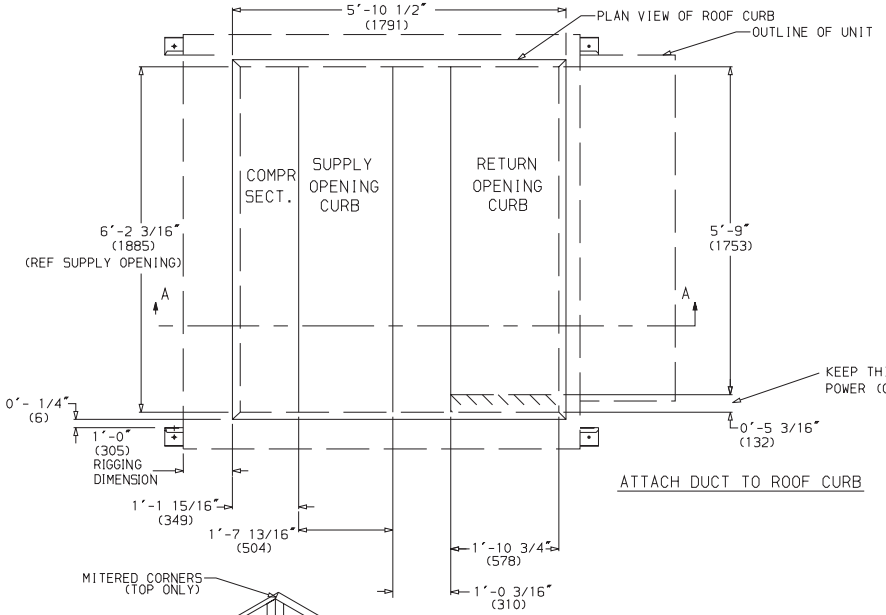
UNIT 50HJQ	WEIGHT OF CORNER*							
	A		B		C		D	
	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg
014	366	166	356	161	360	163	534	242
016	464	211	496	225	477	217	487	221

*Weights are for unit only and do not include options or crating.

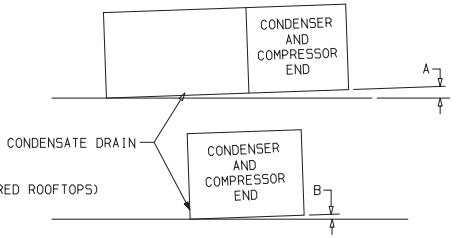
PKG NO. REF.	CURB HEIGHT	DESCRIPTION
CRRFCURB010A00	1′-2″ (305)	Standard Curb 14″ High
CRRFCURB011A00	2′-0″ (610)	Standard Curb for Units Requiring High Installation
CRRFCURB012A00	2′-0″ (610)	Side Supply and Return Curb for High Installation
CRRFCURB013A00	2′-0″ (610)	Horizontal Adapter with High Static Transition Duct

NOTES:
1. Roof curb accessory is shipped disassembled.
2. Insulated panels: 1″ thick neoprene coated 1½ lb density.
3. Dimensions in ( ) are in millimeters.
4. ⇨ Direction of airflow.
5. Roof curb: 16 ga. (VA03-56) stl.
6. **A 90 degree elbow must be installed on the supply ductwork below the unit discharge for units equipped with electric heaters.**

NOTE: To prevent the hazard of stagnant water build-up in the drain pan of the indoor section, unit can only be pitched as shown.



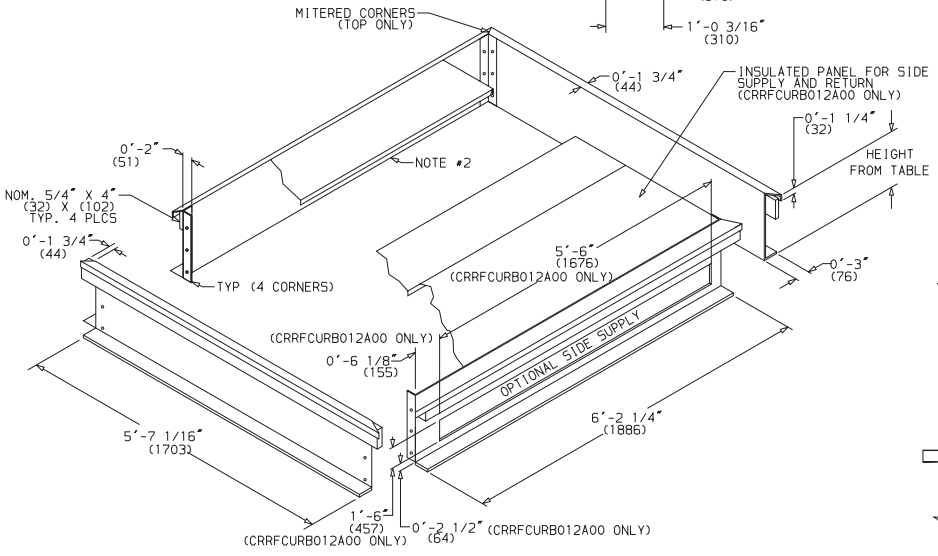
ATTACH DUCT TO ROOF CURB

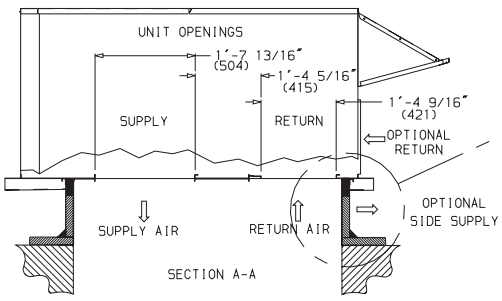


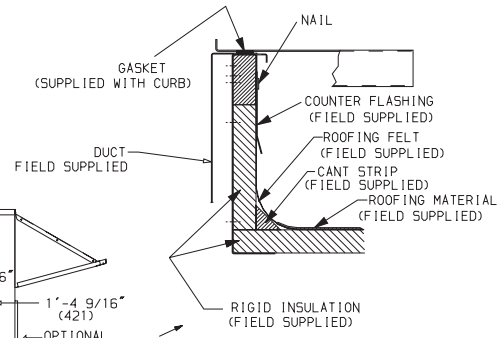
DIMENSIONS* (degrees and inches)

UNIT	A		B	
	Deg.	in.	Deg.	in.
ALL	.28	.45	.28	.43

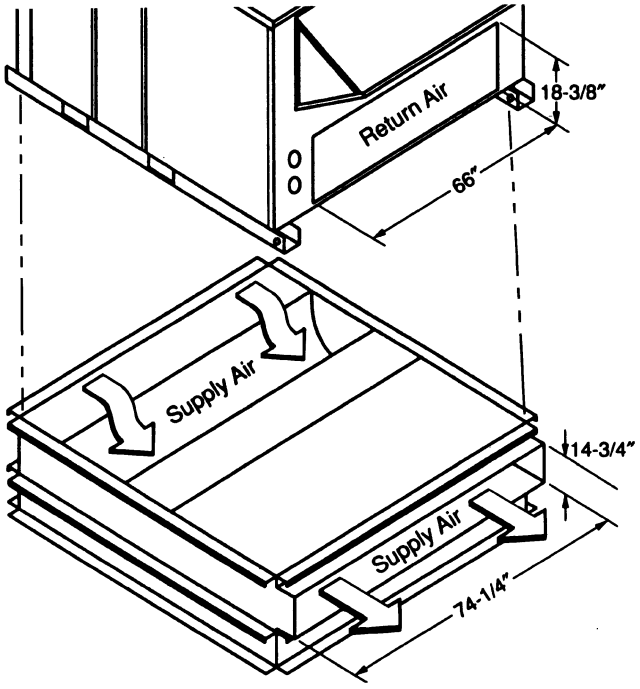
UNIT LEVELING TOLERANCES
*From edge of unit to horizontal.







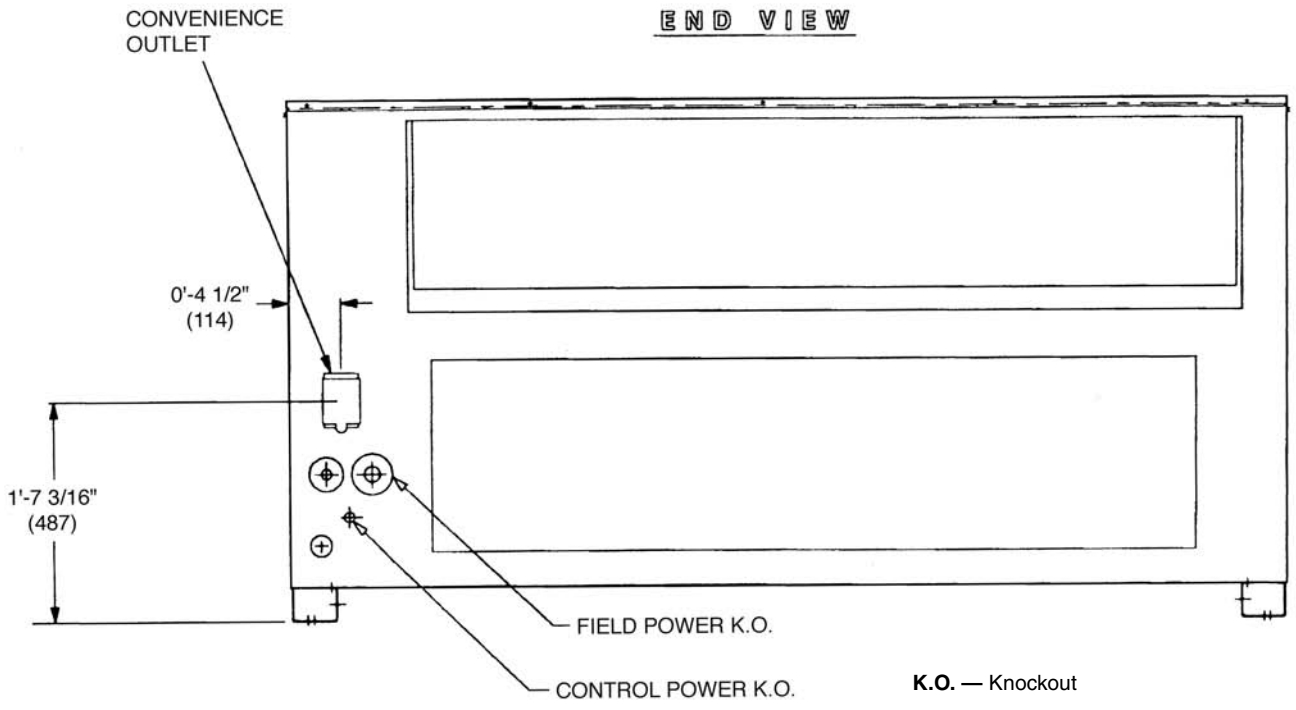
HORIZONTAL ADAPTER INSTALLATION — 50HJQ014,016



NOTE: CRRFCURB013A00 is a fully factory pre-assembled horizontal adapter which includes an insulated high static regain transition duct and substantially improves fan static performance. Power exhaust and barometric relief accessories cannot be used with factory pre-assembled, high static, horizontal adapter.

ACCESSORY PACKAGE NO.	CURB HEIGHT	DESCRIPTION
CRRFCURB013A00	2′-0″ (610)	Pre-Assembled High Static Horizontal Adapter

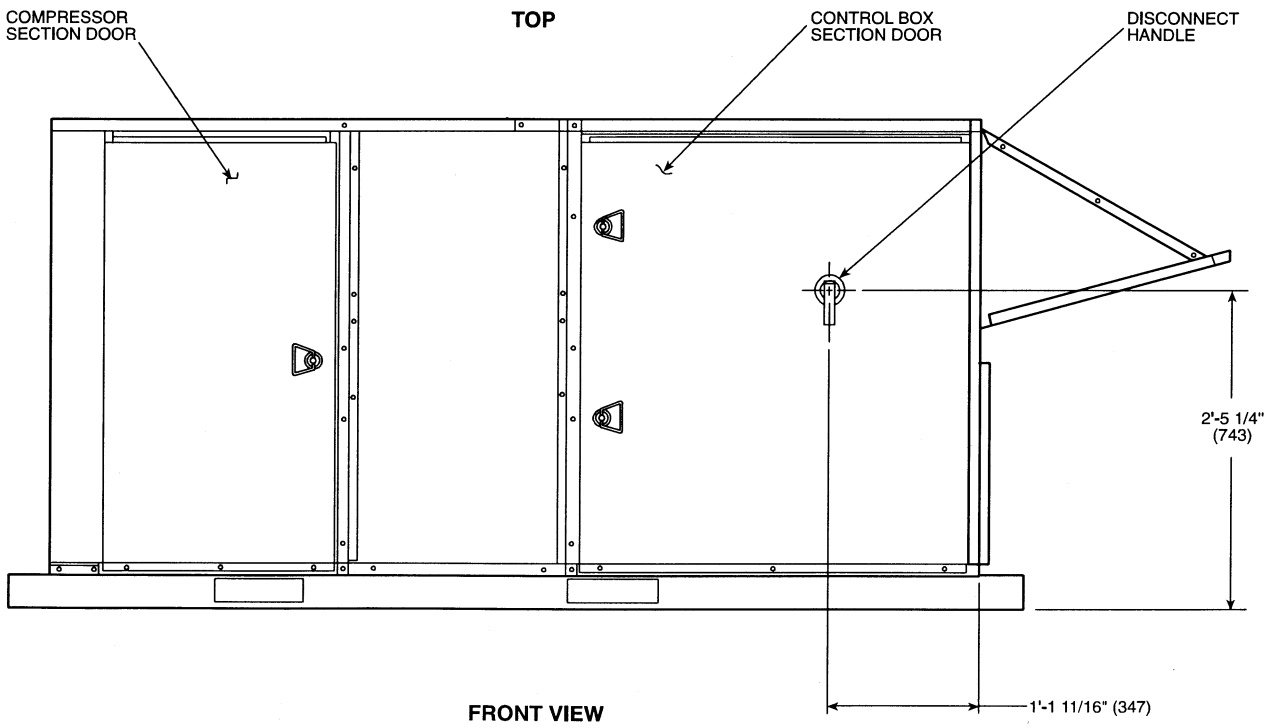
CONVENIENCE OUTLET — 50HJQ014,016



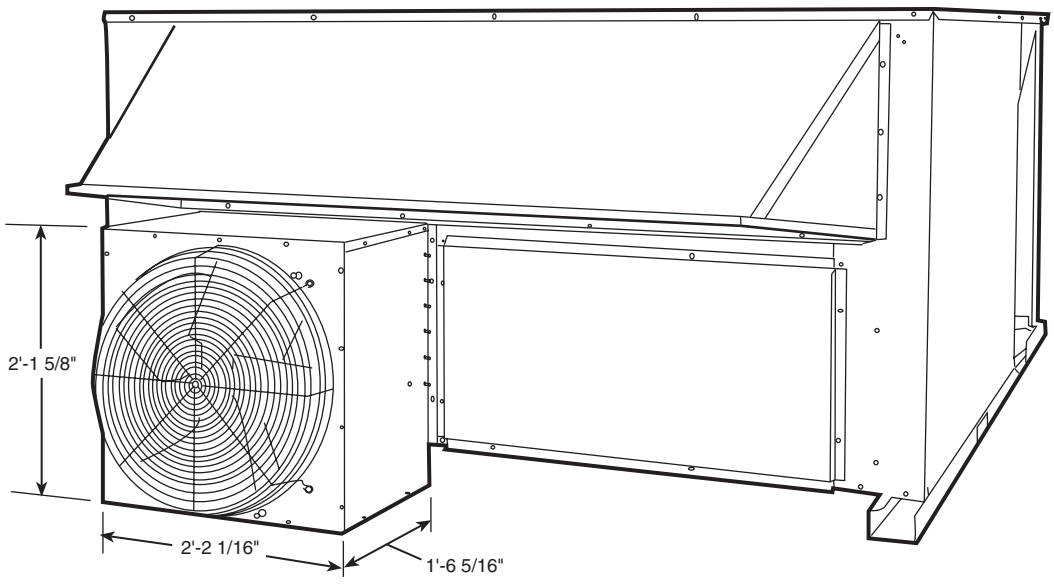
K.O. — Knockout

Accessory dimensions — 50HJQ014,016 (cont)

NON-FUSED DISCONNECT — 50HJQ014,016



POWER EXHAUST — 50HJQ014,016



Selection procedure (with 50HJQ016 example)

I Determine heating and cooling requirements at design conditions.

Given:

Required Cooling Capacity (TC) . . . .164,000 Btuh
Sensible Heat Capacity (SHC) . . . . .120,000 Btuh
Required Heating Capacity . . . . . .170,000 Btuh
Outdoor-Air Temperature (Cooling). . . . . .95 F
Indoor Entering-Air Temperature
(Cooling) . . . . . 80 F Edb/67 F Ewb
Outdoor Coil Entering-Air Temperature
(Heating) . . . . . 0° F
Indoor Winter Design Temperature . . . . . .70 F
Indoor-Air Quantity . . . . . 6000 Cfm
External Static Pressure (ESP . . . . . .1.30 in. wg
Electrical Characteristics (V-Ph-Hz) 230-3-60
Economizer is specified.
Edb — Entering dry bulb
Ewb — Entering wet bulb

II Select unit based on required cooling capacity.

Enter Cooling Capacity table on page 130 at outdoor-entering temperature of 95 F, indoor air entering at 6000 cfm and 67 F ewb. The 50HJQ016 will provide a total capacity (TC) of 180,800 Btuh, a sensible heat capacity (SHC) of 136,400 Btuh and a total unit kW of 15.88.

For indoor-air temperature other than 80 F edb, calculate sensible heat capacity correction, as required, using the formula found in Note 3 following the Cooling Capacities table on page 130.

NOTE: Unit ratings are gross capacities and do not include the effect of indoor-fan motor heat. To calculate net capacities, see Step V.

III Select electric heat.

Enter the Integrated Heating Capacities table on page 131 at 6000 cfm. At 70 F return indoor air and 0° F air entering the outdoor coil, the integrated heating capacity is 56,800 Btuh with a unit input kW of 11.36.

The required heating capacity is 170,000 Btuh; therefore, 113,200 Btuh (170,000 – 56,800) additional electric heat is necessary.

Determine the additional electric heat capacity in kW.

$$\frac{113{,}200 \text{ Btuh}}{3412 \text{ Btuh/kW}} = 33.2 \text{ kW}$$

Enter the Electric Resistance Heater Data table at 230-3-60. The 34-kW heater satisfies the electric heater requirements.

IV Determine fan speed and motor horsepower requirements at design conditions.

Before entering Fan Performance table, calculate the total static pressure required based on unit components. From the given and the Accessory/FIOP Static Pressure table on page 134, find:

External static pressure	1.30 in. wg
Economizer static pressure	0.07 in. wg
Electric heat static pressure	0.09 in. wg
Total static pressure	1.46 in. wg

Enter the Fan Performance table on page 133. At 6000 cfm and 1.46 in. wg external static pressure, the fan speed is 1214 and the bhp is 3.95 (interpolation required). The standard motor and alternate high static drive are suitable.

V Determine net capacities.

Capacities are gross and do not include the effect of indoor-fan motor (IFM) heat.

Determine net cooling capacity as follows:

Net capacity = Gross capacity – IFM heat

$$= 180{,}800 - 3.95 \text{ bhp} \times \frac{2545 \ \frac{\text{Btuh}}{\text{hp}}}{.85}$$

$$= 180{,}800 - 11{,}827$$

$$= 168{,}973 \text{ Btuh}$$

Net sensible capacity = 136,400 – 11,827
= 124,573 Btuh

Determine net heating capacity as follows:

Net capacity =

Gross capacity + IFM heat + Electric heat capacity
= 56,800 + (IFM kW x 3412) + (Elec. kW x 3412)
= 56,800 + 11,827 + (34 x 3412)
= 56,800 + 11,827 + 116,008
= 184,635 Btuh

Performance data

COOLING CAPACITIES

50HJQ014

Temp (F) Air Ent Outdoor Coil		Air Entering Indoor Coil — Cfm/BF														
		3750/0.04			4500/0.05			5000/0.05			5625/0.06			6250/0.07		
		Air Entering Indoor Coil — Ewb (F)														
		72	67	62	72	67	62	72	67	62	72	67	62	72	67	62
75	TC	167.0	154.0	140.0	171.0	158.0	144.0	173.0	159.0	146.0	171.0	162.0	148.0	173.0	161.0	151.0
	SHC	79.6	100.0	120.0	85.0	108.0	131.0	87.5	114.0	138.0	94.5	120.0	146.0	97.7	127.0	150.0
	kW	10.00	9.77	9.50	10.10	9.87	9.61	10.20	9.93	9.68	10.20	10.00	9.74	10.20	10.00	9.80
85	TC	160.0	148.0	133.0	164.0	151.0	137.0	167.0	154.0	140.0	168.0	155.0	143.0	166.0	157.0	146.0
	SHC	77.6	98.9	118.0	82.0	107.0	129.0	86.1	113.0	136.0	89.6	118.0	142.0	95.3	125.0	146.0
	kW	11.10	10.80	10.40	11.20	10.90	10.60	11.30	11.00	10.70	11.30	11.00	10.80	11.30	11.10	10.80
95	TC	155.0	141.0	127.0	157.0	144.0	131.0	160.0	146.0	133.0	161.0	149.0	137.0	163.0	149.0	140.0
	SHC	76.1	96.3	115.0	80.3	105.0	126.0	84.4	110.0	132.0	86.5	117.0	137.0	91.7	121.0	140.0
	kW	12.20	11.80	11.40	12.20	11.90	11.50	12.40	12.00	11.60	12.40	12.10	11.80	12.50	12.10	11.90
105	TC	147.0	133.0	120.0	150.0	137.0	124.0	152.0	138.0	127.0	153.0	140.0	131.0	154.0	141.0	134.0
	SHC	73.6	93.3	112.0	78.5	102.0	123.0	81.6	108.0	127.0	85.1	114.0	131.0	88.6	120.0	134.0
	kW	13.20	12.70	12.30	13.30	12.90	12.50	13.40	13.00	12.60	13.50	13.10	12.80	13.50	13.10	12.90
115	TC	140.0	126.0	112.0	141.0	129.0	118.0	144.0	130.0	121.0	144.0	131.0	125.0	146.0	133.0	128.0
	SHC	71.4	90.3	109.0	75.1	99.1	117.0	78.9	104.0	121.0	81.9	110.0	125.0	87.0	117.0	128.0
	kW	14.20	13.70	13.20	14.30	13.90	13.50	14.40	14.00	13.70	14.50	14.00	13.90	14.60	14.10	14.00
125	TC	131.0	118.0	105.0	134.0	120.0	111.0	135.0	122.0	115.0	137.0	123.0	118.0	136.0	124.0	121.0
	SHC	68.1	87.6	105.0	73.5	96.4	111.0	75.7	102.0	115.0	80.7	108.0	118.0	83.4	113.0	121.0
	kW	15.20	14.70	14.10	15.40	14.90	14.50	15.40	14.90	14.70	15.60	15.00	14.90	15.60	15.10	15.00

50HJQ016

Temp (F) Air Ent Outdoor Coil		Air Entering Indoor Coil — Cfm/BF														
		4500/0.06			5250/0.08			6000/0.10			6750/0.10			7500/0.12		
		Air Entering Indoor Coil — Ewb (F)														
		72	67	62	72	67	62	72	67	62	72	67	62	72	67	62
75	TC	210.0	192.0	173.4	216.0	196.6	178.4	220.0	202.0	182.2	222.0	204.0	185.6	224.0	206.0	190.2
	SHC	100.6	125.2	148.2	106.0	134.0	160.6	110.6	143.0	172.2	115.0	151.2	183.2	120.2	158.2	190.0
	kW	13.58	13.12	12.66	13.76	13.28	12.84	13.88	13.44	12.98	13.96	13.52	13.10	14.02	13.60	13.26
85	TC	202.0	183.0	164.4	208.0	187.8	169.0	212.0	191.4	172.8	212.0	194.0	177.2	214.0	195.8	182.2
	SHC	98.0	121.8	144.2	103.8	131.2	156.4	109.0	140.0	168.6	112.0	148.0	177.0	116.2	155.6	182.2
	kW	14.86	14.32	13.78	15.08	14.52	13.98	15.22	14.66	14.14	15.26	14.78	14.30	15.34	14.86	14.50
95	TC	192.4	173.2	155.0	196.2	177.8	159.2	200.0	180.8	163.4	202.0	183.4	169.0	204.0	185.4	174.2
	SHC	94.8	118.0	140.0	100.2	127.4	152.6	105.6	136.4	163.4	110.6	144.8	169.0	114.2	153.2	173.8
	kW	16.16	15.52	14.88	16.32	15.72	15.10	16.48	15.88	15.30	16.62	16.00	15.54	16.64	16.12	15.76
105	TC	182.0	163.0	145.0	186.4	167.0	149.4	188.6	170.0	155.4	191.0	172.2	160.8	193.0	173.8	165.2
	SHC	91.0	114.2	135.2	96.8	123.6	147.6	101.8	132.6	155.2	107.2	141.2	160.6	112.2	149.6	165.2
	kW	17.36	16.64	15.92	17.58	16.86	16.16	17.70	17.04	16.48	17.84	17.18	16.74	17.94	17.28	16.96
115	TC	171.2	152.4	134.8	175.0	156.2	140.6	177.8	158.8	146.8	179.4	160.8	152.2	179.6	162.2	156.4
	SHC	87.4	110.2	130.8	92.6	119.4	140.6	98.8	128.2	146.8	103.6	136.8	151.8	107.2	144.6	156.2
	kW	18.54	17.72	16.90	18.76	17.94	17.24	18.94	18.12	17.60	19.02	18.28	17.90	19.04	18.38	18.16
125	TC	159.4	141.2	125.0	162.8	143.8	132.0	165.6	147.0	137.8	166.6	148.8	143.0	168.2	150.0	146.8
	SHC	83.6	105.8	125.0	89.0	115.0	131.8	94.4	123.6	137.8	99.8	132.2	142.8	105.0	139.6	146.6
	kW	19.64	18.74	17.88	19.86	19.00	18.34	20.00	19.12	18.72	20.20	19.28	19.00	20.20	19.40	19.28

LEGEND

BF — Bypass Factor
Edb — Entering Dry-Bulb
Ewb — Entering Wet-Bulb
kW — Compressor Motor Power Input
SHC — Gross Sensible Heat Capacity (1000 Btuh)
TC — Gross Total Capacity (1000 Btuh)

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{sensible capacity (Btuh)}}{1.10 \times \text{cfm}}$$

t_{lwb} = Wet-bulb temperature corresponding to enthalpy of air leaving indoor coil (h_{lwb})

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

Where: h_{ewb} = Enthalpy of air entering indoor coil

3. SHC is based on 80 F edb temperature of air entering indoor coil. Below 80 F edb, subtract (corr factor x cfm) from SHC. *Above 80 F edb, add (corr factor x cfm) to SHC.*

BYPASS FACTOR (BF)	ENTERING AIR DRY-BULB TEMP (F)						
	79	78	77	76	75	under 75	
	81	*82*	*83*	*84*	*85*	*over 85*	
	Correction Factor						
.05	1.04	2.07	3.11	4.14	5.18	Use formula shown below.	
.10	.98	1.96	2.94	3.92	4.90		
.20	.87	1.74	2.62	3.49	4.36		
.30	.76	1.53	2.29	3.05	3.82		

Interpolation is permissible.
Correction Factor = 1.10 x (1 – BF) x (edb – 80).

INTEGRATED HEATING CAPACITIES

50HJQ014

CFM	Return Air Temp F (db)	Temp Air Entering Outdoor Coil (F db at 75% RH)																			
		–10		0		10		17		20		30		40		47		50		60	
		Cap.	kW	Cap.	kW	Cap.	kW	Cap.	kW	Cap.	kW	Cap.	kW	Cap.	kW	Cap.	kW	Cap.	kW	Cap.	kW
3750	55	40.4	7.81	53.0	8.35	65.6	8.89	74.5	9.27	78.5	9.47	91.9	10.10	120.0	11.00	140.0	11.50	147.0	11.80	168.0	12.60
	70	37.7	8.19	49.8	8.85	61.9	9.51	70.3	9.97	74.1	10.20	86.8	11.00	114.0	11.90	133.0	12.50	139.0	12.90	161.0	13.90
	80	35.4	8.41	47.1	9.15	58.8	9.89	67.0	10.40	70.8	10.70	83.4	11.50	109.0	12.50	128.0	13.20	134.0	13.60	156.0	14.70
4500	55	40.3	7.98	53.9	8.49	67.5	9.00	77.0	9.35	80.9	9.54	93.8	10.10	123.0	10.90	144.0	11.40	149.0	11.60	167.0	12.30
	70	36.7	8.38	49.8	9.00	62.9	9.62	72.0	10.00	75.9	10.30	88.6	11.00	116.0	11.80	136.0	12.50	142.0	12.70	163.0	13.60
	80	33.2	8.64	46.4	9.32	59.6	10.00	68.7	10.50	72.6	10.70	85.2	11.50	112.0	12.50	131.0	13.10	137.0	13.40	159.0	14.50
5000	55	41.0	8.11	54.7	8.60	68.4	9.09	78.0	9.43	81.9	9.60	95.0	10.20	124.0	10.90	144.0	11.40	149.0	11.60	165.0	12.10
	70	44.7	8.45	55.2	9.07	65.7	9.69	73.1	10.10	76.9	10.30	89.7	11.00	118.0	11.90	138.0	12.50	143.0	12.70	163.0	13.50
	80	33.6	8.76	47.0	9.43	60.4	10.10	69.8	10.60	73.6	10.80	86.3	11.60	113.0	12.50	132.0	13.10	139.0	13.40	160.0	14.40
5625	55	42.0	8.27	55.7	8.74	69.4	9.21	79.0	9.54	83.0	9.71	96.2	10.30	124.0	10.90	144.0	11.40	148.0	11.50	164.0	12.10
	70	42.7	8.66	54.3	9.24	65.9	9.82	74.1	10.20	77.9	10.40	90.9	11.10	120.0	11.90	140.0	12.50	145.0	12.70	163.0	13.40
	80	34.5	8.94	48.0	9.57	61.5	10.20	70.9	10.70	74.7	10.90	87.4	11.60	115.0	12.50	134.0	13.10	140.0	13.40	160.0	14.30
6250	55	44.0	8.43	57.3	8.89	70.6	9.35	79.9	9.67	83.9	9.83	97.3	10.40	124.0	11.00	143.0	11.40	147.0	11.50	160.0	12.00
	70	45.7	8.79	56.8	9.37	67.9	9.95	75.6	10.40	79.4	10.50	91.9	11.20	120.0	12.00	140.0	12.50	145.0	12.70	161.0	13.30
	80	35.2	9.04	48.8	9.72	62.4	10.40	71.9	10.80	75.7	11.00	88.4	11.70	117.0	12.60	136.0	13.20	142.0	13.40	159.0	14.20

50HJQ016

CFM	Return Air Temp F (db)	Temp Air Entering Outdoor Coil (F db at 75% RH)																			
		–10		0		10		17		20		30		40		47		50		60	
		Cap.	kW	Cap.	kW	Cap.	kW	Cap.	kW	Cap.	kW	Cap.	kW	Cap.	kW	Cap.	kW	Cap.	kW	Cap.	kW
3750	55	46.4	9.80	60.8	10.60	75.6	11.34	85.8	11.84	91.4	12.10	110.0	12.96	150.2	14.00	178.2	14.72	189.4	15.08	228.0	16.32
	70	39.6	10.04	54.4	10.96	69.8	11.86	80.4	12.48	85.8	12.78	103.4	13.82	141.6	15.02	168.4	15.84	179.0	16.26	214.0	17.64
	80	35.0	10.20	50.2	11.20	65.8	12.20	76.8	12.90	81.8	13.24	99.2	14.38	136.0	15.70	161.8	16.60	172.0	17.04	206.0	18.52
4500	55	47.8	10.02	62.0	10.78	77.0	11.48	87.6	11.96	93.2	12.20	112.0	12.98	153.2	13.92	182.2	14.58	193.4	14.90	230.0	15.94
	70	40.6	10.26	55.8	11.16	71.2	12.00	82.0	12.60	87.4	12.90	105.4	13.86	144.6	14.98	172.0	15.74	182.8	16.12	220.0	17.36
	80	36.0	10.44	51.6	11.40	67.4	12.36	78.4	13.04	83.6	13.36	101.0	14.44	138.8	15.68	165.2	16.52	175.8	16.94	212.0	18.30
5000	55	48.6	10.26	63.0	10.98	78.4	11.64	89.2	12.10	94.8	12.32	113.6	13.06	155.2	13.94	184.4	14.56	195.8	14.86	234.0	15.80
	70	41.8	10.50	56.8	11.36	72.6	12.18	83.6	12.76	89.0	13.04	107.2	13.96	147.0	15.00	174.8	15.74	185.8	16.08	222.0	17.24
	80	37.2	10.66	52.8	11.62	68.6	12.54	79.8	13.20	85.0	13.50	103.0	14.56	141.4	15.72	168.2	16.52	179.0	16.90	216.0	18.18
5625	55	49.2	10.50	63.8	11.18	79.4	11.82	90.2	12.26	96.0	12.46	115.2	13.18	158.0	14.02	187.8	14.60	198.4	14.84	234.0	15.64
	70	42.6	10.72	58.0	11.58	73.6	12.38	84.6	12.92	90.2	13.20	108.6	14.08	149.2	15.08	177.6	15.78	188.4	16.10	224.0	17.14
	80	38.2	10.88	54.0	11.84	69.8	12.74	81.0	13.38	86.4	13.68	104.4	14.68	143.4	15.80	170.8	16.58	181.6	16.94	218.0	18.14
6250	55	50.0	10.72	64.6	11.40	80.2	12.00	91.0	12.42	97.0	12.64	116.6	13.30	159.8	14.14	190.0	14.70	200.0	14.92	234.0	15.58
	70	43.4	10.96	58.8	11.80	74.6	12.58	85.6	13.12	91.2	13.36	110.0	14.22	151.0	15.20	179.6	15.88	190.2	16.16	226.0	17.12
	80	39.0	11.12	54.8	12.06	70.8	12.94	82.0	13.56	87.6	13.86	105.6	14.84	145.0	15.92	172.6	16.66	183.6	17.00	220.0	18.16

LEGEND

Cap. — Capacity (1000 Btuh)
Edb — Entering Air Dry-Bulb Temperature (F)
Ldb — Leaving Air Dry-Bulb Temperature (F)
kW — Compressor and Outdoor-Fan Power Input
RH — Relative Humidity

NOTES:

1. Integrated heating capacity ratings shown are not adjusted for the effects of the indoor-fan motor power and heat. A deduction has been made for defrosting the outdoor coils at temperatures below 40 F.
2. Direct interpolation is permissible. Do not extrapolate.
3. When using auxiliary and/or supplementary heating, the maximum allowable leaving-air temperature is 140 F.

$$\text{Ldb F} = \text{Edb F} + \frac{\text{Total heating cap. (Btuh)}}{1.10 \times \text{airflow cfm}}$$

4. For supplementary glycol coil:

$$\text{Fluid flow Gpm} = \frac{\text{fluid capacity (Btuh)}}{500 \times \text{fluid temperature drop (F)}}$$

Performance data (cont)

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS

50HJQ014 (208/230 V AND 460 V)

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
3750	724	481	0.55	838	685	0.78	937	889	1.01	1028	1097	1.25	1111	1309	1.49
4000	754	613	0.70	865	824	0.94	962	1034	1.18	1050	1247	1.42	1131	1463	1.67
4250	786	757	0.86	893	975	1.11	987	1191	1.36	1073	1408	1.60	1152	1629	1.86
4500	818	914	1.04	922	1138	1.30	1013	1360	1.55	1097	1583	1.80	1174	1808	2.06
4750	850	1084	1.23	951	1313	1.50	1040	1541	1.76	1122	1770	2.02	1197	2000	2.28
5000	883	1267	1.44	980	1501	1.71	1068	1736	1.98	1147	1969	2.24	1221	2204	2.51
5250	917	1464	1.67	1011	1703	1.94	1096	1943	2.21	1174	2183	2.49	1246	2423	2.76
5500	950	1675	1.91	1041	1918	2.19	1124	2165	2.47	1201	2409	2.75	1272	2655	3.02
5750	985	1901	2.17	1072	2147	2.45	1153	2400	2.73	1228	2650	3.02	1298	2901	3.31
6000	1020	2142	2.44	1103	2391	2.72	1183	2649	3.02	1256	2905	3.31	1324	3160	3.60
6250	1055	2398	2.73	1135	2650	3.02	1213	2912	3.32	1284	3175	3.62	1352	3435	3.91

50HJQ014 (208/230 V AND 460 V) (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
3750	1190	1526	1.74	1265	1746	1.99	1337	1972	2.25	1405	2199	2.51	1471	2431	2.77
4000	1208	1684	1.92	1281	1908	2.17	1351	2136	2.43	1418	2368	2.70	1483	2603	2.97
4250	1227	1853	2.11	1299	2082	2.37	1367	2313	2.64	1433	2548	2.90	1496	2787	3.18
4500	1247	2036	2.32	1317	2268	2.58	1384	2503	2.85	1448	2742	3.12	1510	2983	3.40
4750	1269	2232	2.54	1337	2468	2.81	1403	2707	3.08	1465	2948	3.36	1526	3194	3.64
5000	1291	2441	2.78	1358	2680	3.05	1422	2923	3.33	1484	3168	3.61	1544	3418	3.89
5250	1315	2664	3.03	1380	2907	3.31	1443	3154	3.59	1503	3403	3.88	1562	3655	4.16
5500	1339	2900	3.30	1403	3148	3.59	1464	3398	3.87	1524	3651	4.16	—	—	—
5750	1364	3151	3.59	1426	3403	3.88	1486	3657	4.17	—	—	—	—	—	—
6000	1389	3416	3.89	1450	3672	4.18	—	—	—	—	—	—	—	—	—
6250	1415	3695	4.21	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

Refer to page 133 for general Fan Performance notes.

NOTES:
1. Standard drive range is 891 to 1179 rpm. Alternate drive range is 1227 to 1559. Other rpms may require a field-supplied drive.
2. Maximum continuous bhp is 4.25 and maximum continuous watts are 3775. Do not adjust motor rpm such that motor maximum bhp and/or watts is exceeded at the maximum operating cfm.

50HJQ014 (575 V)

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
3750	724	481	0.55	838	685	0.78	937	889	1.01	1028	1097	1.25	1111	1309	1.49
4000	754	613	0.70	865	824	0.94	962	1034	1.18	1050	1247	1.42	1131	1463	1.67
4250	786	757	0.86	893	975	1.11	987	1191	1.36	1073	1408	1.60	1152	1629	1.86
4500	818	914	1.04	922	1138	1.30	1013	1360	1.55	1097	1583	1.80	1174	1808	2.06
4750	850	1084	1.23	951	1313	1.50	1040	1541	1.76	1122	1770	2.02	1197	2000	2.28
5000	883	1267	1.44	980	1501	1.71	1068	1736	1.98	1147	1969	2.24	1221	2204	2.51
5250	917	1464	1.67	1011	1703	1.94	1096	1943	2.21	1174	2183	2.49	1246	2423	2.76
5500	950	1675	1.91	1041	1918	2.19	1124	2165	2.47	1201	2409	2.75	1272	2655	3.02
5750	985	1901	2.17	1072	2147	2.45	1153	2400	2.73	1228	2650	3.02	1298	2901	3.31
6000	1020	2142	2.44	1103	2391	2.72	1183	2649	3.02	1256	2905	3.31	—	—	—
6250	1055	2398	2.73	1135	2650	3.02	1213	2912	3.32	—	—	—	—	—	—

50HJQ014 (575 V) (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
3750	1190	1526	1.74	1265	1746	1.99	1337	1972	2.25	1405	2199	2.51	1471	2431	2.77
4000	1208	1684	1.92	1281	1908	2.17	1351	2136	2.43	1418	2368	2.70	1483	2603	2.97
4250	1227	1853	2.11	1299	2082	2.37	1367	2313	2.64	1433	2548	2.90	1496	2787	3.18
4500	1247	2036	2.32	1317	2268	2.58	1384	2503	2.85	1448	2742	3.12	1510	2983	3.40
4750	1269	2232	2.54	1337	2468	2.81	1403	2707	3.08	1465	2948	3.36	—	—	—
5000	1291	2441	2.78	1358	2680	3.05	1422	2923	3.33	—	—	—	—	—	—
5250	1315	2664	3.03	1380	2907	3.31	—	—	—	—	—	—	—	—	—
5500	1339	2900	3.30	—	—	—	—	—	—	—	—	—	—	—	—
5750	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6250	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

Refer to page 133 for general Fan Performance notes.

NOTES:
1. Factory-shipped motor drive range is 1159 to 1429 rpm. Other rpms may require a field-supplied drive.
2. Maximum continuous bhp is 3.45 and maximum continuous watts are 3065. Do not adjust motor rpm such that motor maximum bhp and/or watts is exceeded at the maximum operating cfm.

FAN PERFORMANCE — VERTICAL DISCHARGE UNITS (cont)

50HJQ016

Airflow (Cfm)	External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
4500	584	717	0.8	695	952	1.1	798	1205	1.3	893	1483	1.7	984	1786	2.0
4800	609	839	0.9	717	1085	1.2	815	1346	1.5	907	1630	1.8	994	1938	2.2
5100	634	971	1.1	738	1229	1.4	833	1500	1.7	921	1791	2.0	1006	2104	2.4
5400	660	1118	1.3	760	1389	1.6	852	1669	1.9	937	1968	2.2	1019	2286	2.6
5700	687	1284	1.4	783	1566	1.8	873	1858	2.1	956	2165	2.4	1034	2490	2.8
6000	712	1458	1.6	805	1752	2.0	892	2055	2.3	973	2371	2.7	1049	2703	3.0
6300	736	1644	1.8	826	1952	2.2	911	2265	2.5	990	2591	2.9	1064	2930	3.3
6600	763	1856	2.1	851	2176	2.4	933	2502	2.8	1010	2837	3.2	1082	3186	3.6
6900	788	2078	2.3	873	2410	2.7	954	2747	3.1	1029	3093	3.5	1099	3451	3.9
7200	813	2316	2.6	896	2662	3.0	975	3011	3.4	1048	3367	3.8	1117	3734	4.2
7500	841	2584	2.9	921	2943	3.3	998	3304	3.7	1070	3672	4.1	1137	4049	4.5

50HJQ016 (cont)

Airflow (Cfm)	External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
4500	1070	2113	2.4	1151	2458	2.8	1229	2819	3.2	1302	3194	3.6	—	—	—
4800	1078	2269	2.5	1157	2620	2.9	1233	2990	3.3	1306	3374	3.8	—	—	—
5100	1086	2439	2.7	1164	2795	3.1	1238	3170	3.5	—	—	—	—	—	—
5400	1097	2626	2.9	1172	2986	3.3	1245	3366	3.8	—	—	—	—	—	—
5700	1110	2835	3.2	1183	3200	3.6	1253	3584	4.0	—	—	—	—	—	—
6000	1122	3053	3.4	1193	3422	3.8	1262	3810	4.3	—	—	—	—	—	—
6300	1135	3286	3.7	1204	3660	4.1	1271	4052	4.5	—	—	—	—	—	—
6600	1151	3549	4.0	1218	3928	4.4	1283	4325	4.8	—	—	—	—	—	—
6900	1167	3821	4.3	1232	4207	4.7	1295	4608	5.2	—	—	—	—	—	—
7200	1183	4113	4.6	1246	4505	5.0	—	—	—	—	—	—	—	—	—
7500	1202	4437	5.0	1264	4837	5.4	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

Refer to this page for general Fan Performance notes.

NOTES:
1. Standard drive range is 817 to 1038 rpm. Alternate drive range is 1082 to 1303. Other rpms may require a field-supplied drive.
2. Maximum continuous bhp is 5.90 and maximum continuous watts are 5180. Do not adjust motor rpm such that motor maximum bhp and/or watts is exceeded at the maximum operating cfm.

GENERAL NOTES FOR FAN PERFORMANCE TABLES

1. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. For additional information on motor performance, refer to Indoor-Fan Motor Performance table on page 136.
2. Values include losses for filters, unit casing, and wet coils. See page 134 for accessory/FIOP static pressure information.
3. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.
4. Interpolation is permissible. Do not extrapolate.

Performance data (cont)

ACCESSORY/FIOP STATIC PRESSURE* (in. wg) — 50HJQ014,016

ACCESSORY/FIOP	UNIT SIZE	UNIT VOLTAGE	kW	CFM							
				3750	4500	5000	5600	6000	6250	7200	7500
Electric Heaters	014	208/230-3-60	14-34 42,56	0.05 0.06	0.05 0.06	0.07 0.08	0.08 0.10	0.09 0.12	0.09 0.13	0.11 0.16	0.12 0.17
		460-3-60	15,32 55	0.05 0.06	0.05 0.06	0.07 0.08	0.08 0.10	0.09 0.12	0.09 0.13	0.11 0.15	0.12 0.15
		575-3-60	37	0.06	0.06	0.08	0.10	0.12	0.13	0.15	0.17
	016	208/230-3-60	26,34 42,59	*	*	*	0.08 0.10	0.09 0.12	0.09 0.13	0.11 0.16	0.12 0.17
		460-3-60	32,55	*	*	*	0.08 0.10	0.09 0.12	0.09 0.13	0.11 0.15	0.12 0.17
		575-3-60	50	*	*	*	0.13	0.15	0.16	0.20	0.21
Economizer	All	All	—	0.03	0.03	0.05	0.06	0.07	0.07	0.09	0.10
Glycol Coil	All	All	—	0.16	0.18	0.25	0.31	0.35	0.37	0.44	0.46

LEGEND

FIOP — Factory-Installed Option

*Units with electric heat are not designed to operate at these ranges.

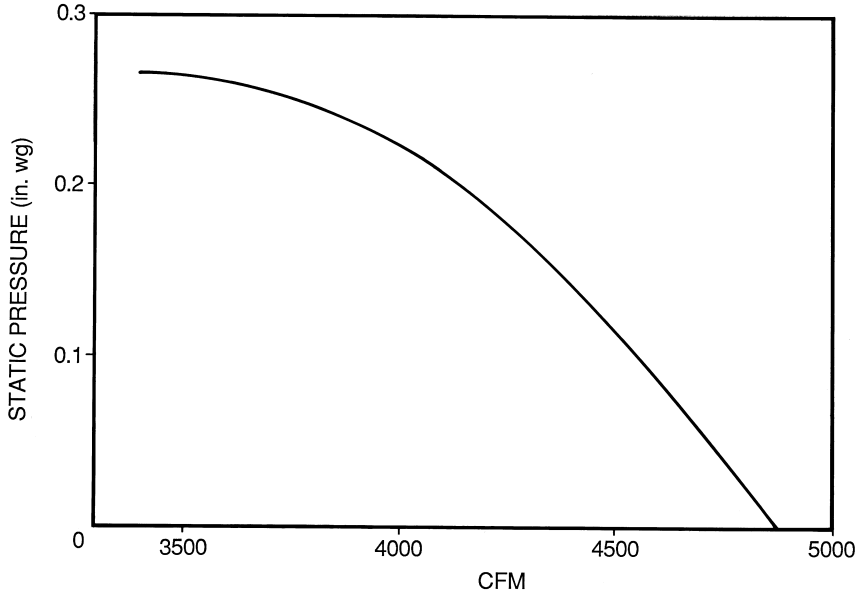
NOTES:
1. Heaters are rated at 208/240 v, 480 v, and 600 v.
2. The static pressure must be added to external static pressure. The sum and the indoor-air section entering-air cfm should then be used in conjunction with the Fan Performance table to determine blower rpm, bhp, and watts.

FAN RPM AT MOTOR PULLEY SETTINGS* — 50HJQ014,016

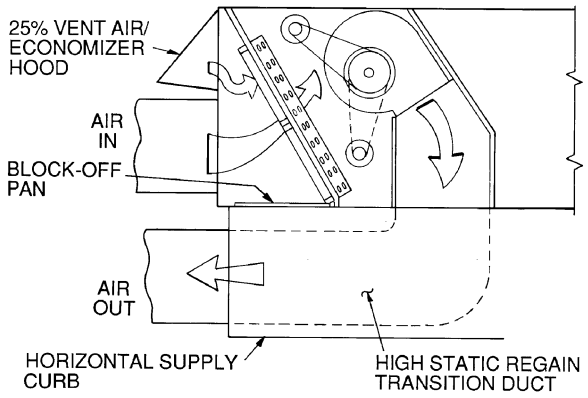
UNIT 50HJQ	MOTOR PULLEY TURNS OPEN												
	0	1/2	1	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6
014 (208/230 V and 460 V)†	—	—	1179	1150	1121	1093	1064	1035	1006	978	949	920	891
014 (208/230 V and 460 V)**	—	—	1559	1522	1488	1455	1422	1389	1356	1323	1289	1256	1227
014 (575 V)†	—	—	1429	1403	1376	1349	1323	1296	1269	1242	1215	1188	1159
016†	—	—	1038	1023	1001	979	956	934	912	890	868	846	817
016**	—	—	1303	1288	1266	1244	1222	1199	1177	1155	1133	1111	1082

*Approximate fan rpm shown.
†Standard motor with standard drive.
**Standard motor with alternate drive.

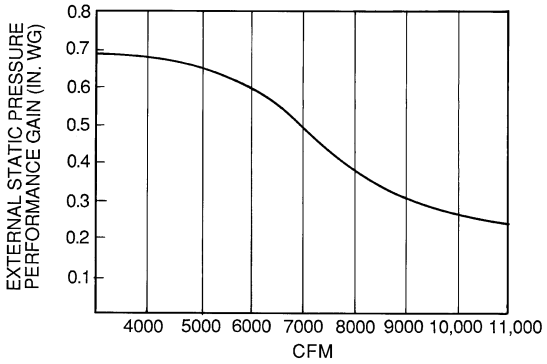
FAN PERFORMANCE USING ACCESSORY POWER EXHAUST



HORIZONTAL SUPPLY/RETURN FAN PERFORMANCE WITH CRRFCURB013A00 HIGH STATIC REGAIN ADAPTER



NOTE: The CRRFCURB013A00 high static regain adapter accessory may be used to provide horizontal supply/return.



NOTE: The CRRFCURB013A00 horizontal supply/return adapter accessory improves 50HJQ fan performance by increasing external static pressure by amount shown above.

ELECTRIC HEATING CAPACITIES — 50HJQ014,016

UNIT 50HJQ	HEATER kW				HEATER STAGES	% HEAT PER STAGE	MAXIMUM STAGES*
	Unit Voltages						
	208	230	460	575			
014	14	19	15	—	1	100	1
	26	34	32	—	2	50/50	2
	42	56	55	37	2	33/67	3
016	26	34	32	—	2	50/50	2
	42	56	55	—	2	33/67	3
	—	—	—	50	2	50/50	4

*Maximum number of stages using accessory outdoor-air thermostats.

NOTE: Heaters are rated at 208 v, 240 v, 480 v, and 600 v. See multiplication factors table on page 68.

GLYCOL COIL DATA*

EDB	EGT	CFM																	
		4400						5000						6200					
		% Glycol																	
		25			50			25			50			25			50		
		Cap.	Gpm	Ldb	Cap.	Gpm	Ldb	Cap.	Gpm	Ldb	Cap.	Gpm	Ldb	Cap.	Gpm	Ldb	Cap.	Gpm	Ldb
55	200	310	33	120	293	33	116	333	35	117	315	36	113	375	40	111	353	40	108
	180	255	27	108	237	27	105	274	29	106	254	29	102	308	33	101	285	33	98
	160	200	21	97	181	21	93	215	23	95	194	22	91	241	25	91	217	25	87
70	200	274	29	127	257	29	124	294	31	124	276	31	121	331	35	119	310	35	116
	180	218	23	116	201	23	112	235	25	114	216	25	110	264	28	109	241	28	106
	160	164	17	104	146	17	100	176	19	103	156	18	99	197	21	99	174	20	96
80	200	249	26	132	233	27	129	268	28	130	250	28	126	301	32	125	280	32	122
	180	194	21	121	177	20	117	209	22	119	190	22	115	234	25	115	212	24	112
	160	140	15	109	123	14	106	150	16	108	131	15	104	168	18	105	146	17	102

LEGEND

Cap. — Btuh x 1000
EDB — Entering Dry-Bulb Temperature (F)
EGT — Entering Glycol Temperature (F)
Gpm — Gallons per Minute
Ldb — Leaving Dry-Bulb Temperature (F)

*This accessory glycol coil is intended for use with a MINIMUM of 25% glycol solution. It IS NOT intended for use solely with water due to freeze-up conditions and the resulting water damage to the conditioned space.

NOTE: Fluid Δt = 20 F.

GLYCOL COIL RATINGS

ENTERING FLUID TEMP (F)	CFM							
	4000		5000		6000		8000	
	GPM	ΔP	GPM	ΔP	GPM	ΔP	GPM	ΔP
200	27	1.2	31	1.5	35	1.8	41	2.4
180	22	0.9	25	1.1	27	1.3	32	1.6
160	16	0.6	19	0.7	20	0.8	24	1.0

NOTE: ΔP is the fluid pressure in ft of head.

Performance data (cont)

INDOOR-FAN MOTOR PERFORMANCE — 50HJQ014,016 UNITS

UNIT 50HJQ	UNIT VOLTAGE	MAXIMUM ACCEPTABLE CONTINUOUS BHP*	MAXIMUM ACCEPTABLE OPERATING WATTS	MAXIMUM AMP DRAW	MOTOR EFFICIENCY
014	208/230	4.25	3775	10.5	85.8
	460			4.9	85.8
	575	3.45	3065	3.9	81.7
016	208/230	5.90	5180	15.8	87.5
	460			7.9	87.5
	575			6.0	87.5

LEGEND

Bhp — Brake Horsepower

*Extensive motor and electrical testing on these units ensures that the full horsepower range of the motors can be utilized with confidence. Using your fan motors up to the horsepower ratings shown in this table will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.

Electrical data

UNIT 50HJQ	VOLTAGE (3 PH, 60 Hz)	VOLTAGE RANGE		COMPRESSOR No. 1		COMPRESSOR No. 2		OUTDOOR FAN MOTOR		INDOOR FAN MOTOR		POWER EXHAUST		ELECTRIC HEAT*		POWER SUPPLY		DISCONNECT SIZING	
		Min	Max	RLA	LRA	RLA	LRA	Qty	FLA (ea)	Hp	FLA	FLA	LRA	FLA	kW	MCA	MOCP†	RLA	LRA
014	208/230	187	253	39.7	228	—	—	3	1.7	3.7	10.5/10.5	—	—	—/— 39/ 45 72/ 92 117/135	—/— 14/19 26/34 42/56	65/ 65 114/122 155/168 211/200	100/100 125/150 175/175 225/225	64/ 64 64/ 64 94/107 147/167	387/387
												4.6	18.8	—/— 39/ 45 72/ 82 117/135	—/— 14/19 26/34 42/56	70/ 70 119/126 159/173 216/205	100/100 125/150 175/175 225/225	69/ 69 69/ 69 100/112 152/173	406/406
	460	414	508	19.9	114	—	—	3	0.8	3.7	4.8	—	—	— 18 39 66	— 15 32 55	32 54 81 98	50 60 90 110	31 31 50 82	189
												2.3	6.0	— 18 39 66	— 15 32 55	34 57 83 100	50 70 90 110	34 34 53 84	195
	575	518	632	16.0	91	—	—	3	0.75	3.0	3.9	—	—	— 37	— 37	26 72	40 80	26 47	91
												2.1	4.8	— 37	— 37	28 75	40 80	28 50	96
016	208/230	187	253	28.2	160	28.2	160	3	1.7	5	15.8/158	—	—	—/— 72/ 82 117/135	—/— 26/34 42/56	84/ 84 174/187 231/219	110/110 175/200 250/225	89/ 89 101/112 153/173	499/485
												4.6	18.8	—/— 72/ 82 117/135	—/— 26/34 42/56	89/ 89 179/191 235/224	110/110 200/200 250/225	94/ 94 106/118 158/179	518/504
	460	414	508	14.1	80	14.1	80	3	0.8	5	7.9	—	—	— 39 66	— 32 55	42 91 108	50 100 110	44 54 85	238
												2.3	6.0	— 39 66	— 32 55	44 93 110	50 100 125	47 57 88	244
	575	518	632	11.3	64	11.3	64	3	0.75	5	6.0	—	—	— 50	— 50	34 96	40 100	35 64	165
												2.1	4.8	— 50	— 50	36 98	45 100	38 67	169

LEGEND

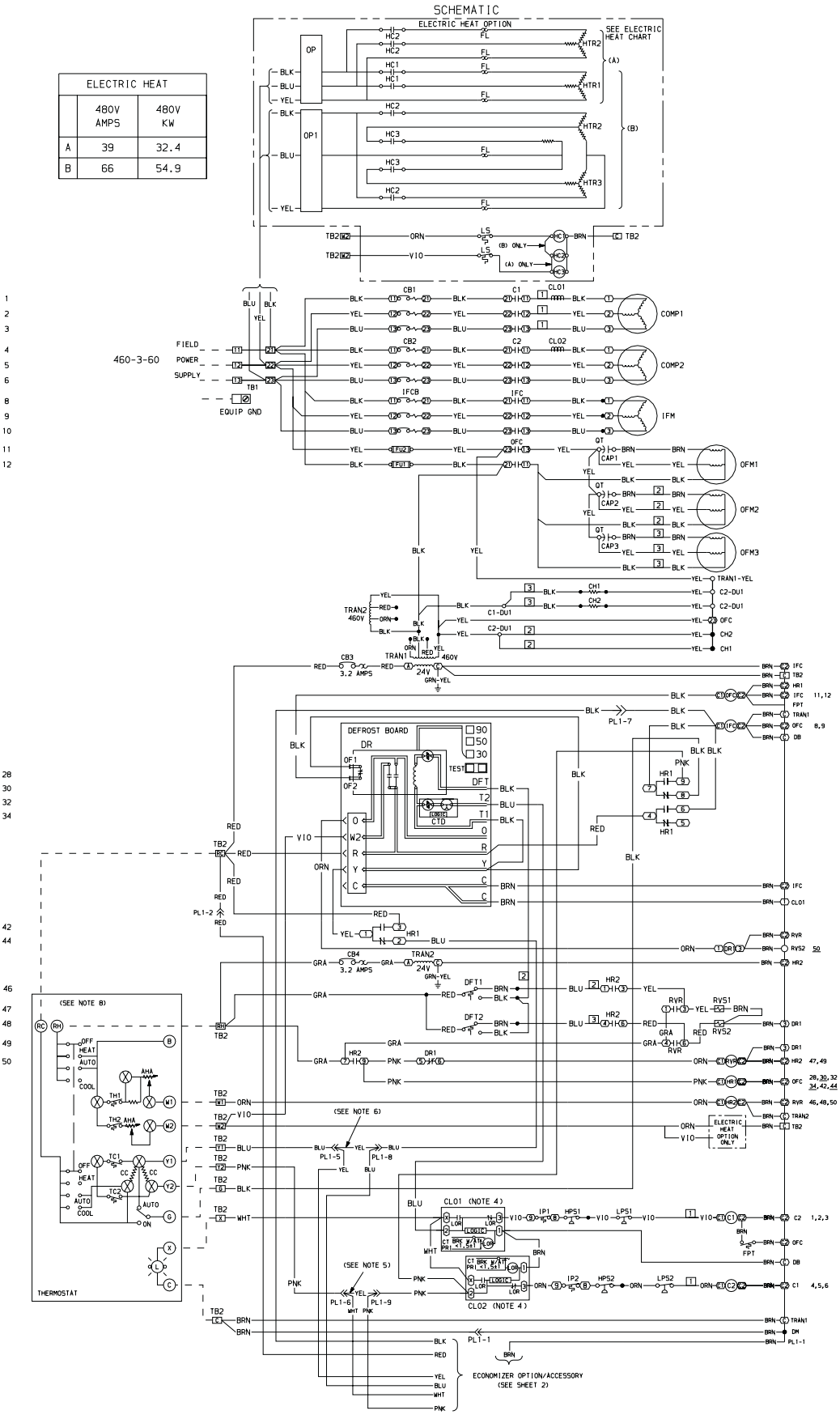
FLA — Full Load Amps
HACR — Heating, Air Conditioning and Refrigeration
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
MOCP — Maximum Overcurrent Protection
NEC — National Electrical Code
RLA — Rated Load Amps

*Heater capacity (kW) is based on heater voltage of 208 v, 240 v, 480 v and 600 v. If power distribution voltage to unit varies from rated heater voltage, heater kW will vary accordingly.

†Fuse or HACR circuit breaker. This is the maximum size permissible; smaller fuse size may be used where conditions permit.

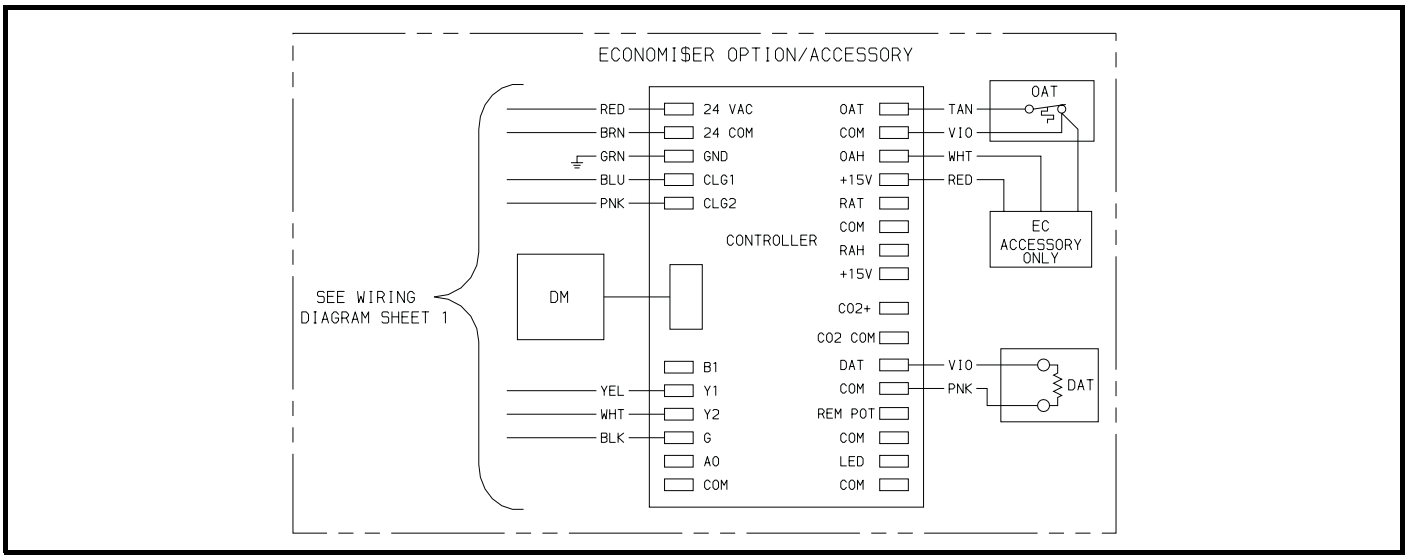
NOTES:
1. In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. The Canadian units may be fuse or circuit breaker.
2. MCA calculation for units with electric heaters over 50 kW = (1.25 x IFM amps) + (1.00 x heater FLA).

Typical wiring schematic (50HJQ016, 460-3-60 shown)



50HJQ014,016

Typical wiring schematic (cont)



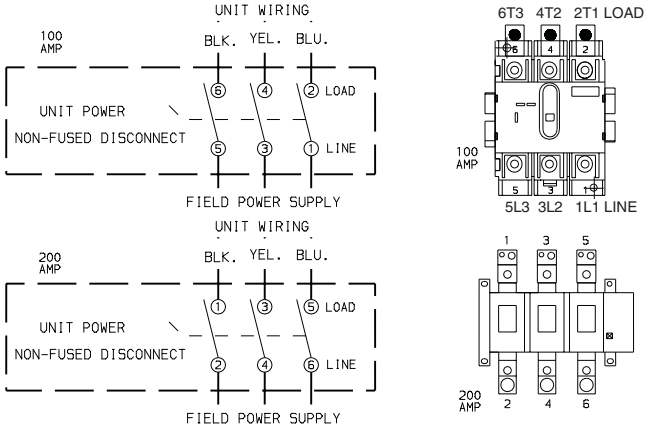
LEGEND AND NOTES FOR TYPICAL WIRING SCHEMATIC

AHA — Adjustable Heat Anticipator
BKR W/AT — Breaks with Amp Turns
C — Contactor, Compressor
CAP — Capacitor
CB — Circuit Breaker
CC — Cooling Compensator
CH — Crankcase Heater
CLO — Compressor Lockout
COMP — Compressor Motor
CT — Current Transformer
CTD — Compressor Time Delay
DAT — Discharge Air Thermistor
DB — Defrost Board
DFT — Defrost Thermostat
DM — Damper Motor
DR — Defrost Relay
DU — Dummy Terminal
EC — Enthalpy Control
EQUIP — Equipment
FL — Fuse Link
FPT — Freeze Protection Thermostat
GND — Ground
HC — Heater Contactor
HPS — High-Pressure Switch
HR — Heat Relay
HTR — Heater
IFC — Indoor-Fan Contactor
IFCB — Indoor-Fan Circuit Breaker
IFM — Indoor Fan Motor
IP — Internal Protector
L — Light
LOR — Lock Out Relay
LPS — Low-Pressure Switch
LS — Limit Switch
OAT — Outdoor-Air Thermostat
OFC — Outdoor-Fan Contactor
OFM — Outdoor Fan Motor
OP — Overcurrent Protector
PL — Plug Assembly
QT — Quadruple Terminal
RVR — Reversing Valve Relay
RVS — Reversing Valve Solenoid
TB — Terminal Block
TC — Thermostat Cooling
TH — Thermostat Heating
TRAN — Transformer

Terminal (Marked)
Terminal (Unmarked)
Terminal Block
Splice
Factory Wiring
Field Wiring
Option/Accessory Wiring
To Indicate Common Potential Only: Not To Represent Wiring

NOTES:
1. Compressor and/or fan motor(s) thermally protected. Three-phase motors are protected against primary single phasing conditions.
2. If any of the original wire furnished must be replaced, it must be replaced with type 90° C wire or its equivalent.
3. CB1,2 must trip amps are equal to or less than 156% FLA, IFCB 140%.
4. The CLO locks out the compressor to prevent short cycling on compressor overload and safety devices. Before replacing CLO, check these devices.
5. Jumpers are omitted when unit is equipped with economizer.
6. Number(s) indicates the line location of used contacts. A bracket over (2) numbers signifies a single-pole, double-throw contact. An underlined number signifies a normally-closed contact. Plain (no line) number signifies a normally-open contact.
7. Remove jumper between terminals RC and RH.

OPTIONAL NON-FUSED DISCONNECT — 50HJQ014,016



NOTES:
1. If the non-fused disconnect Service Option is ordered for size 014,016 units, the Non-Fused Disconnect will be factory-installed.
2. The Disconnect takes the place of TB-1 as shown on the unit wiring diagram label and the component arrangement label.

Guide specifications — 50HJQ014,016

Packaged Rooftop Air-to-Air Heat Pump — Constant Volume Application

HVAC Guide Specifications

Size Range: **13 to 15 Tons, Nominal (Cooling)**
136,000 to 172,000 Btuh, Nominal (Input Heating)

Carrier Model Number: **50HJQ**

Part 1 — General

1.01 SYSTEM DESCRIPTION

Outdoor rooftop mounted, electrically controlled air-to-air heat pump unit utilizing reciprocating, semi-hermetic compressor(s) for cooling duty and electric resistance coils for heating duty. Unit shall discharge supply air vertically or horizontally (with horizontal supply/return adapter assembly or roof curb) as shown on contract drawings.

1.02 QUALITY ASSURANCE

A. Unit shall be rated in accordance with ARI Standards 210/240 or 360 and 270. Designed in accordance with UL Standard 1995.

B. Unit shall be designed to conform to ASHRAE 15, latest revision.

C. Unit shall be UL-tested and certified in accordance with ANSI Z21.47 Standards and UL-listed and certified under Canadian standards as a total package for safety requirements.

D. Roof curb shall be designed to conform to NRCA Standards.

E. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.

F. Unit casing shall be capable of withstanding 500-hour salt spray exposure per ASTM B117 (scribed specimen).

G. Unit shall be designed in accordance with ISO 9001, and shall be manufactured in a facility registered to ISO 9001:2000.

H. Each unit shall be subjected to a completely automated run testing on the assembly line. Units contain a factory-supplied printout indicating tested pressures, amperages, data, and inspectors; providing certification of the unit status at the time of manufacture.

1.03 DELIVERY, STORAGE, AND HANDLING

Unit shall be stored and handled per manufacturer's recommendations.

Part 2 — Products

2.01 EQUIPMENT (STANDARD)

A. General:

Factory assembled, single-piece heat pump unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, refrigerant charge (R-22), and special features required prior to field start-up.

B. Unit Cabinet:

1. Unit cabinet shall be constructed of galvanized steel, and shall be bonderized and coated with a prepainted baked enamel finish on all externally exposed surfaces.
2. Indoor fan compartment interior cabinet surfaces shall be insulated with a minimum 1/2-in. thick, 1 lb. density, flexible fiberglass insulation, neoprene coated on the air side. Aluminum foil-faced fiberglass insulation shall be used in the gas heat compartment.
3. Cabinet panels shall be easily removable for servicing.
4. Holes shall be provided in the base rails for rigging shackles to facilitate maneuvering and overhead rigging.
5. Unit shall have a factory-installed, sloped condensate drain pan made of a non-corrosive material, providing a minimum 3/4-in. 14 NPT connection with both vertical and horizontal drains, and shall comply with ASHRAE Standard 62.
6. Unit shall have a factory-installed filter access panel to provide filter access with tool-less removal.
7. Unit shall have standard thru-the-bottom gas and power connection capability (accessory kit is required).

C. Fans:

1. Indoor Fan:
   a. Fan shall be belt driven with an adjustable-pitch motor pulley. The standard fan drive shall have a factory-installed low-medium static pressure fan drive. The alternate fan drive option shall have a factory-installed high static pressure fan drive.
   b. Fan wheel shall be double-inlet type with forward-curved blades.
   c. Bearings shall be sealed, permanently lubricated ball-bearing type for longer life and lower maintenance.
   d. Bearings shall be pillow block type (016 only).
2. Indoor fan shall be made from steel with a corrosion-resistant finish and shall be dynamically balanced.
3. Outdoor fan shall be of the direct-driven (with totally enclosed motors) propeller type and shall discharge air vertically.
4. Outdoor fan shall have aluminum blades riveted to corrosion-resistant steel spiders and shall be dynamically balanced.

D. Compressor(s):

1. Reciprocating semi-hermetic compressors with factory-installed crankcase heaters.

2. Factory mounted on rubber grommets and internally spring mounted for vibration isolation.
3. On independent circuits (016).
4. The size 014 unit semi-hermetic compressor shall be equipped with an electric unloader for capacity control.

E. Coils:
1. Standard indoor and outdoor coils shall have copper or aluminum plate fins mechanically bonded to seamless internally grooved copper tubes with all joints brazed.
2. Coils:
   a. Copper-fin coils shall be constructed of copper fins mechanically bonded to copper tubes and copper tube sheets. Galvanized steel tube sheets shall not be acceptable. A polymer strip shall prevent coil assembly from contacting the sheet metal coil pan to minimize potential for galvanic corrosion between coil and pan. All copper construction shall provide protection in moderate coastal environments.
   b. E-Coated aluminum-fin coils shall have a flexible epoxy polymer coating uniformly applied to all coil surface areas without material bridging between fins. Coating process shall ensure complete coil encapsulation. Color shall be high gloss black with gloss — 60 deg of 65 to 90% per ASTM D523-89. Uniform dry film thickness from 0.8 to 1.2 mil on all surface areas including fin edges. Superior hardness characteristics of 2H per ASTM D3363-92A and cross-hatch adhesion of 4B-5B per ASTM D3359-93. Impact resistance shall be up to 160 in.-lb (ASTM D2794-93). Humidity and water immersion resistance shall be up to minimum 1000 and 250 hours respectively (ASTM D2247-92 and ASTM D870-92). Corrosion durability shall be confirmed through testing to be no less than 1000 hours salt spray per ASTM B117-90. Coil construction shall be aluminum fins mechanically bonded to copper tubes.
   c. E-Coated copper-fin coils shall have a flexible epoxy polymer coating uniformly applied to all coil surface areas without material bridging between fins. Coating process shall ensure complete coil encapsulation. Color shall be high gloss black with gloss — 60 deg of 65 to 90% per ASTM D523-89. Uniform dry film thickness from 0.8 to 1.2 mil on all surface areas including fin edges. Superior hardness characteristics of 2H per ASTM D3363-92A and cross-hatch adhesion of 4B-5B per ASTM D3359-93. Impact resistance shall be up to 160 in.-lb (ASTM D2794-93). Humidity and water immersion resistance shall be up to minimum 1000 and 250 hours respectively (ASTM D2247-92 and ASTM D870-92). Corrosion durability shall be confirmed through testing to be no less than 1000 hours salt spray per ASTM B117-90. Coil construction shall be copper fins mechanically bonded to copper tubes with copper tube sheets. Galvanized steel tube sheets shall not be acceptable. A polymer strip shall prevent coil assembly from contacting sheet metal coil pan to maintain coating integrity and minimize corrosion potential between coil and pan.
   d. Optional pre-coated aluminum-fin coils shall have a durable epoxy-phenolic coating to provide protection in mildly corrosive coastal environments. Coating shall be applied to the aluminum fin stock prior to the fin stamping process to create an inert barrier between the aluminum fin and copper tube. Epoxy-phenolic barrier shall minimize galvanic action between dissimilar metals.

F. Heating Section:
1. May be equipped with field-installed electric resistance heater(s) of the characteristics shown in the equipment schedule.
2. Heater elements shall be open wire, adequately supported and insulated with ceramic bushings.

G. Refrigerant Components:

Refrigerant circuit components shall include:
1. Fixed orifice metering system (Acutrol™).
2. Refrigerant filter drier.
3. Reversing valve.
4. Service gage connections on suction, discharge, and liquid lines.

H. Filter Section:
1. Standard filter section shall consist of factory-installed, low velocity, throwaway 2-in. thick fiberglass filters of commercially available sizes.
2. Filter face velocity shall not exceed 320 fpm at nominal airflows.
3. Filter section should use only one size filter.
4. Filters shall be accessible through an access panel with "no-tool" removal.

I. Controls and Safeties:
1. Unit Controls:

   Unit shall be complete with self-contained low-voltage control circuit protected by a resettable circuit breaker on the 24-v transformer side.
2. Safeties:
   a. Unit shall incorporate a solid-state compressor protector which provides anti-cycle reset capability at the space thermostat, should any of the following standard safety devices trip and shut off compressor.

1) Compressor overtemperature, overcurrent.
2) Loss-of-charge/low-pressure switch.
3) Freeze-protection thermostat, evaporator coil.
4) High-pressure switch.
5) Automatic reset motor thermal overload protector.

The lockout protection shall be easily disconnected at the control board, if necessary.

b. Heating section shall be provided with the following minimum protections:
1) High-temperature limit switches.
2) Overcurrent protection.

c. Unit shall incorporate an outdoor coil defrost system to prevent excessive frost accumulation during heating duty, and shall be controlled as follows:
1) Defrost shall be initiated on the basis of time and coil temperature.
2) A 30/50/90-minute timer shall activate defrost cycle only if the coil temperature is low enough to indicate a heavy frost condition.
3) Defrost cycle shall terminate when defrost thermostats are satisfied and shall have a positive termination time of 10 minutes.

J. Operating Characteristics:
1. Unit shall be capable of starting and running at 125 F ambient outdoor temperature, meeting maximum load criteria of ARI Standard 210/240 or 360 at ± 10% voltage.
2. Compressor with standard controls shall be capable of operation down to 40 F (in cooling mode) ambient outdoor temperature.
3. Compressor with standard controls shall be capable of operation down to –20 F (in heating mode) ambient outdoor temperature.
4. Unit shall be capable of simultaneous heating duty and defrost cycle operation when using accessory electric heaters.

K. Electrical Requirements:

All unit power wiring shall enter unit cabinet at a single factory-predrilled location.

L. Motors:
1. Compressor motors shall be cooled by refrigerant gas passing through motor windings and shall have line break thermal and current overload protection.
2. Indoor-fan motor shall have permanently lubricated bearings and inherent automatic-reset thermal overload protection.
3. Totally enclosed outdoor-fan motor shall have permanently lubricated bearings, and inherent automatic-reset thermal overload protection.

M. Special Features:

Certain features are not applicable when the features designated * are specified. For assistance in amending the specifications, contact your local Carrier Sales Office.

* 1. Carrier PremierLink™ Controls:
a. Shall be available as a factory-installed or as a field-installed accessory.
b. Shall work with CCN and ComfortVIEW™ software.
c. Shall be compatible with *Comfort*Link™ controllers.
d. Shall be ASHRAE 62-99 compliant.
e. Shall accept a CO_2 sensor in the conditioned space — Demand Control Ventilation (DCV) Ready.
f. Shall have baud communication rate of 38.4K or faster.
g. Shall be Internet Ready.
h. Shall include an integrated economizer controller.

* 2. Direct Digital Controls (Apollo):
a. Shall be available as a factory-installed option.
b. Shall actively monitor all modes of operation, as well as evaporator-fan status, filter status, indoor-air quality, supply-air temperature, and outdoor-air temperature.
c. Shall work with Carrier TEMP and VVT® systems.
d. Shall have built-in diagnostics for thermostat commands for both staged heating and cooling, evaporator-fan operation, and economizer operation.
e. Shall be equipped with a 5-minute time delay between modes of operation.

3. Roof Curbs (Horizontal and Vertical):
a. Formed galvanized steel with wood nailer strip and shall be capable of supporting entire unit weight.
b. Permits installation and securing of ductwork to curb prior to mounting unit on the curb.

4. Horizontal Adapter Roof Curb:

Includes factory-assembled adapter and duct which substantially improves indoor fan static motor performance (static regain).

NOTE: Power exhaust and barometric relief must be mounted in the return ductwork when used in conjunction with this accessory.

* 5. Integrated Economizers:
a. Integrated integral modulating type capable of simultaneous economizer and compressor operation.

b. Includes all hardware and controls to provide cooling with outdoor air.

c. Equipped with low-leakage dampers, not to exceed 2% leakage at 1 in. wg pressure differential.

d. Capable of introducing up to 100% outdoor air.

e. Economizer shall be equipped with a barometric relief damper.

f. Designed to close damper(s) during loss-of-power situations with spring return built into motor.

g. Dry bulb outdoor-air temperature sensor shall be provided as standard. Enthalpy, differential temperature, and differential enthalpy control shall be provided as an option.

h. Economizer is a gear-driven parallel blade design.

i. Economizer shall provide control of internal building pressure through its accessory two-stage power exhaust function.

j. Economizer shall be capable of control from a 4 to 20 mA signal.

6. Barometric Relief Damper:

a. Package shall include damper, seals, hardware, and hoods to relieve excess internal pressure.

b. Damper shall close due to gravity upon unit shutdown.

7. Manual Outdoor-Air Damper:

Manual damper package shall consist of damper, birdscreen, and rainhood which can be preset to admit up to 50% outdoor air for year round ventilation.

* 8. 25% Two-Position Damper:

a. Two-position damper package shall include single blade damper and motor. Admits up to 25% outdoor air.

b. Damper shall close upon indoor fan shutoff.

* 9. Head Pressure Control Package:

Consists of solid-state control and condenser-coil temperature sensor to maintain condensing temperature between 90 F and 110 F at outdoor ambient temperatures down to –20 F by condenser-fan speed modulation or condenser-fan cycling and wind baffles.

10. Electric Resistance Heaters:

a. Open wire nichrome elements with all necessary safety operating controls.

b. UL listed and indicated on basic unit information plate.

c. Available in multiples to match heating requirements.

d. Single point kits available for each heater when required.

*11. Electronic Programmable Thermostat:

Capable of using deluxe full-featured electronic thermostat. Shall use built-in compressor cycle delay control for both heating and cooling duty. Capable of working with Carrier direct digital controls.

*12. Thermostat and Subbase:

Provides staged cooling and heating automatic (or manual) changeover, fan control, and indicator light.

13. Unit-Mounted, Non-Fused Disconnect Switch:

Shall be factory-installed, internally mounted. NEC and UL approved non-fused switch shall provide unit power shutoff. Shall be accessible from outside the unit and shall provide power off lockout capability.

14. Convenience Outlet:

Shall be factory-installed and internally mounted with easily accessible 115-v female receptacle. Shall include 15 amp GFI receptacle with independent fuse protection. Voltage required to operate convenience outlet shall be provided by a factory-installed step-down transformer. Shall be accessible from outside the unit.

15. Compressor Cycle Delay:

Unit shall be prevented from restarting for minimum of 5 min. after shutdown.

16. Thru-the-Bottom Utility Connectors:

Kit shall provide connectors to permit electrical connections to be brought to the unit through the basepan.

17. Fan/Filter Status Switch:

Provides status of indoor (evaporator) fan (ON/OFF) or filter (CLEAN/DIRTY). Status shall be displayed over communication bus when used with direct digital controls or with an indicator light at the thermostat.

18. EconoMi$er and Power Exhaust:

Package shall provide control of internal building pressure. The two-stage system shall exhaust up to 100% of return air (vertical only).

19. Two-Stage Power Exhaust Accessory for EconoMi$er:

Power exhaust shall be used in conjunction with EconoMi$er to provide system exhaust of up to 100% of return air. The power exhaust is a field-installed accessory (vertical and horizontal applications).

The individual fans are energized through the end switches located in the actuator, which will open as the outdoor-air damper opens. These end switches are factory set for 30 and 70% of

outdoor-air, and can be set to meet specific job requirements.

20. Outdoor Air Enthalpy Sensor:

    The outdoor air enthalpy sensor shall be used with the EconoMi$er device to provide single enthalpy control. When used in conjunction with a return air enthalpy sensor, the EconoMi$er device will provide differential enthalpy control. The sensor allows the EconoMi$er controller to determine if outside air is suitable for free cooling.

21. Return Air Enthalpy Sensor:

    The return air enthalpy sensor shall be used with the EconoMi$er device. When used in conjunction with an outdoor air enthalpy sensor, the EconoMi$er device will provide differential enthalpy control.

22. Return Air Temperature Sensor:

    The return air temperature sensor shall be used with the EconoMi$er device. When used in conjunction with the standard outdoor air temperature sensor, the EconoMi$er device will provide differential temperature control.

23. Indoor Air Quality (CO_2) Sensor:

    a. Shall have the ability to provide demand ventilation indoor air quality (IAQ) control through the economizer with an IAQ sensor.

    b. The IAQ sensor shall be available in duct mount, wall mount, and wall mount with LED display. The set point shall have adjustment capability.

24. Ultra-Violet Germicidal Lamps:

    Ultra-violet germicidal lamps are designed to eliminate odor causing mold and fungus that may develop in the wet area of the evaporator section of the unit. The high output, low temperature germicidal lamps are field installed in the evaporator section of the unit, aimed at the evaporator coil and condensate pan. The short wavelength ultra-violet light inhibits and kills mold, fungus and microbial growth. The lamps have an output rating at 45 F in 400 fpm airflow of 120 microwatts/cm^2 at 1 meter.

25. Hinged Panel Option:

    Hinged panel option provide hinged access panels for the filter, compressor, evaporator fan, and control box areas. Filter hinged panels permit tool-less entry for changing filters. Each hinged panel is permanently attached to the rooftop unit.

26. Emergency Heat Control Package:

    When mechanical heating is locked out, auxiliary heat shall be activated when necessary.

27. Glycol Coil:

    Coil shall be 2-row copper tube (1/2-in. OD) with aluminum plate fins (15 fins/in.) and 1.625 in. OD copper headers. Input and output connections shall be 1.625 in. ODM copper stubs for sweat connection. Coil shall be furnished with suitable support rails, end plates, and hardware for ready field installation in the heater compartment.

28. Winter Start Time Delay:

    Used in conjunction with the accessory low ambient kit or head pressure control device, the kit permits operation in cooling at lower outdoor temperatures. See price pages for more information.

29. Alternate Drive:

    Alternate drive shall provide higher static drive capability to enhance indoor fan performance rpm range.

30. Stainless Steel Condensate Pan:

    Stainless steel condensate pans shall be available for condensate collection.

Index

50HJQ004-012 section *86-121*
50HJQ014,016 section *122-144*
50TFQ004-012 section *32-85*
Airflow
 Configuration *28*
 Maximum *28*
 Minimum *29*
Apollo controls *21-23,29*
Application data *28,29*
ARI capacity ratings
 50HJQ004-012 *86*
 50HJQ014,016 *123*
 50TFQ004-012 *32*
Barometric relief characteristics
 Durablade economizer
  50HJQ004-012 *108*
  50TFQ004-012 *67*
 EconoMi$er
  50HJQ004-012 *108*
  50TFQ004-012 *67*
CCN 3rd party interface *13*
CCN LAN *15*
CCN LEN *14*
Changeover, heating to cooling *28*
Controls *12-28*
Convenience outlet *127*
Cooling capacities
 50HJQ004-012 *94,95*
 50HJQ014,016 *130*
 50TFQ004-012 *40-42*
Dimensions
 Accessory
  50HJQ004-012 *91,92*
  50HJQ014,016 *126-128*
  50TFQ004-012 *37,38*
 Base unit
  50HJQ004-012 *89,90*
  50HJQ014,016 *125*
  50TFQ004-012 *35,36*
Ductwork *28*
Economizer *28,67,108*
Electric heating capacities
 50HJQ004-012 *109*
 50HJQ014,016 *135*
 50TFQ004-012 *68*
Electrical data
 50HJQ004-012 *111-114*
 50HJQ014,016 *136*
 50TFQ004-012 *70-78*
Energy$Recycler *4*
Fan performance
 50HJQ004-012 *29,99-106*
 50HJQ014,016 *29,132,133*
 50HJQ014,016 with horizontal adapter *135*
 50TFQ004-012 *29,46-65*
Fan RPM at motor pulley settings
 50HJQ004-012 *107*
 50HJQ014,016 *134*
 50TFQ004-012 *66*
Features/Benefits *1-4*
Glycol coil *135*
Guide specifications
 50HJQ004-012 *117-121*
 50HJQ014,016 *140-144*
 50TFQ004-012 *81-85*
Horizontal adapter *127*
Horizontal discharge conversion *28*
Heating ratings
 Instantaneous and integrated heating ratings
  50HJQ004-012 *96-98*
  50TFQ004-012 *42-45*
 Integrated heating ratings
  50HJQ014,016 *131*
Indoor air quality *22*
Indoor fan motor performance
 50HJQ004-012 *110*
 50HJQ014,016 *136*
 50TFQ004-012 *69*
Internal unit design *29*
Minimum ambient cooling
 operating temperature *29*
Model number nomenclature
 50HJQ004-012 *86*
 50HJQ014,016 *122*
 50TFQ004-012 *32*
Multiplication factors
 50HJQ004-012 *109*
 50HJQ014,016 *68*
 50TFQ004-012 *68*
Non-fused disconnect 50HJQ014,016 *128,139*
Options and accessories *5-11*
Outdoor sound power 50HJQ004-012 *109*
Outdoor installation *28*
Performance data
 50HJQ004-012 *94-110*
 50HJQ014,016 *130-136*
 50TFQ004-012 *40-69*
Physical data
 50HJQ004-012 *87,88*
 50HJQ014,016 *123,124*
 50TFQ004-012 *33,34*
Piping and wiring
 50HJQ004-012 *30*
 50HJQ014,016 *31*
 50TFQ004-012 *30*
Power exhaust
 50HJQ004-012 *108*
 50HJQ014,016 *128,134*
 50TFQ004-012 *67*
 With EconoMi$er
  50HJQ004-012 *108*
  50TFQ004-012 *67*
PremierLink™ direct digital controls *12,16,29*
Roof Curb
 50HJQ004-007 *91*
 50HJQ008-012 *92*
 50HJQ014,016 *126*
 50TFQ004-007 *37*
 50TFQ008-012 *38*
Selection procedure
 50HJQ004-012 *93*
 50HJQ014,016 *129*
 50TFQ004-012 *39*
Static pressure drop
 50HJQ004-012 *107*
 50HJQ014,016 *134*
 50TFQ004-012 *66*
TEMP systems *17*
Thermostats *28*
Thru-the-bottom power connections *28*
VVT® systems *18*
VVT application guidelines *19-21*
Wiring schematic
 50HJQ004-012 *115,116*
 50HJQ014,016 *137-139*
 50TFQ004-012 *79,80*

Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.

Book 1 4 Tab 5a 5a | New Book 1 Tab OP3b Pg 146 Catalog No. 525-00022 Printed in U.S.A. PC 111 Form 50H,T-1PD
Replaces: 50HJQ-1PD, 50HJQ-4PD, 50TFQ-2PD